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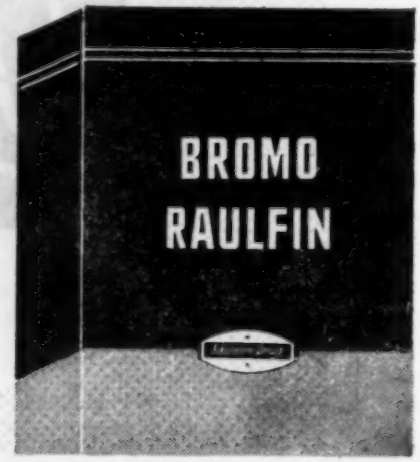

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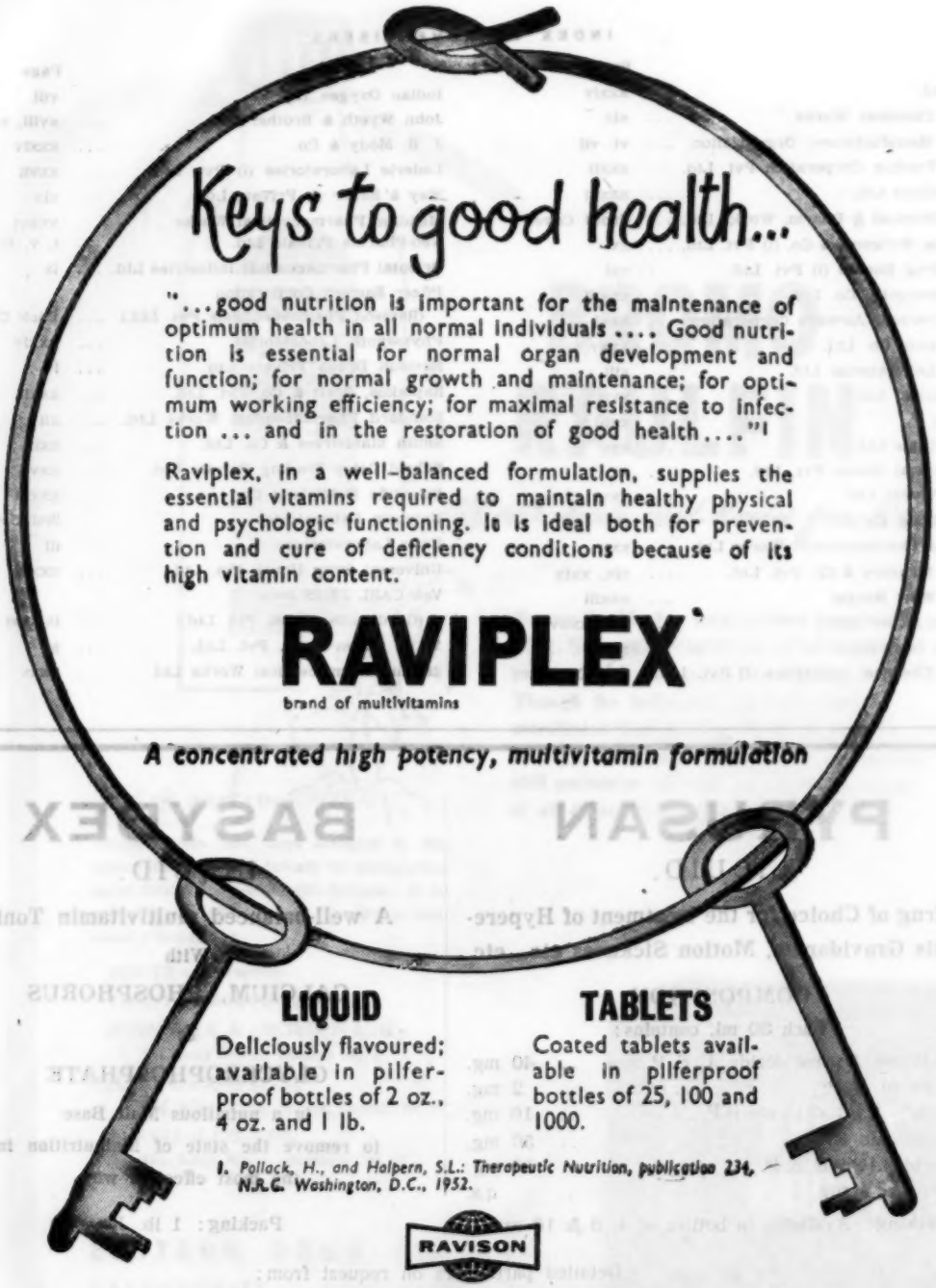

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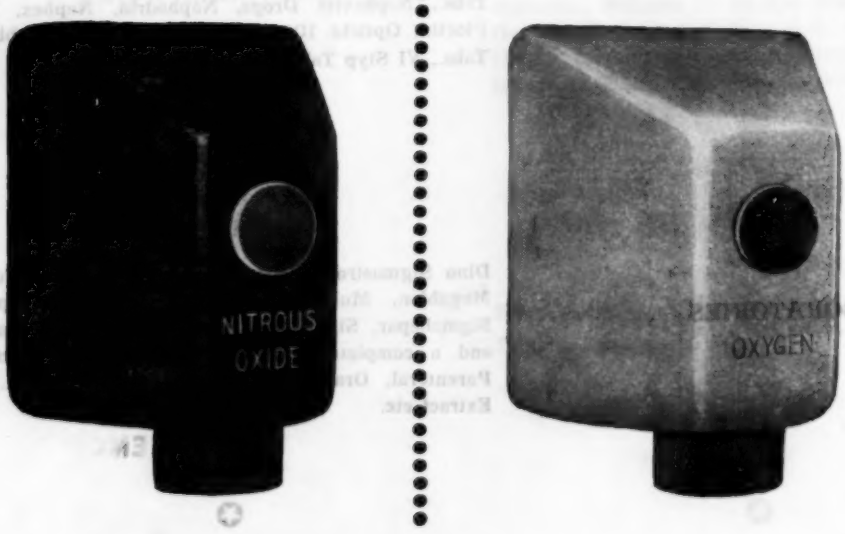

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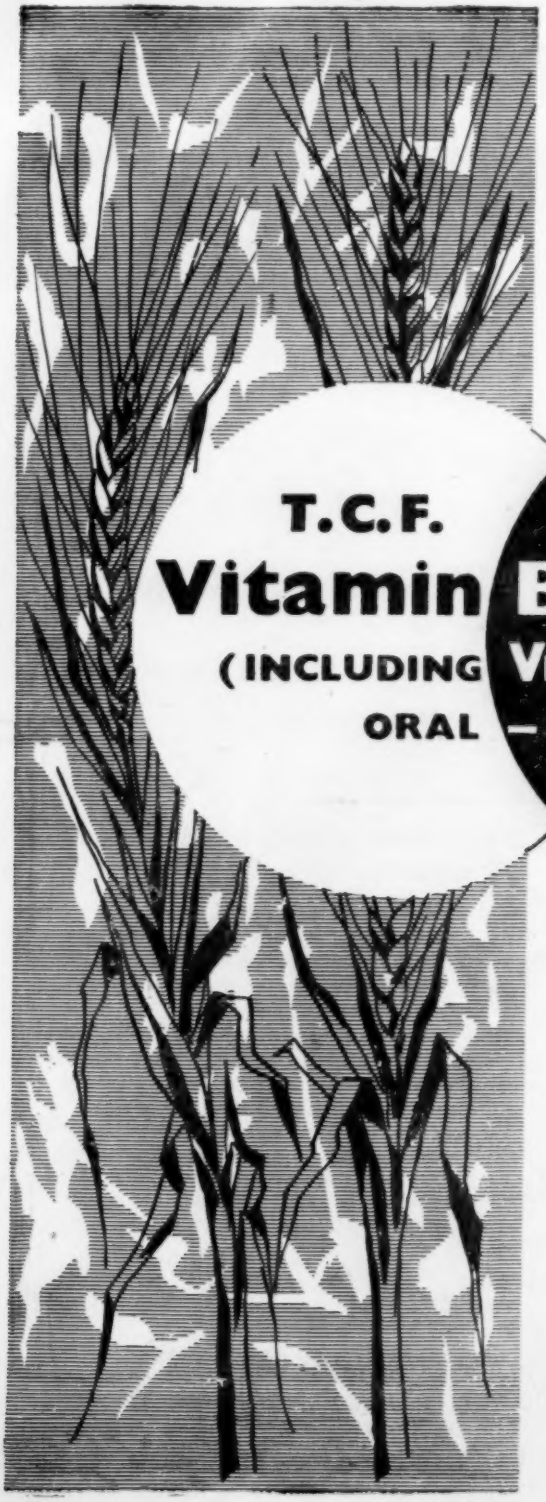

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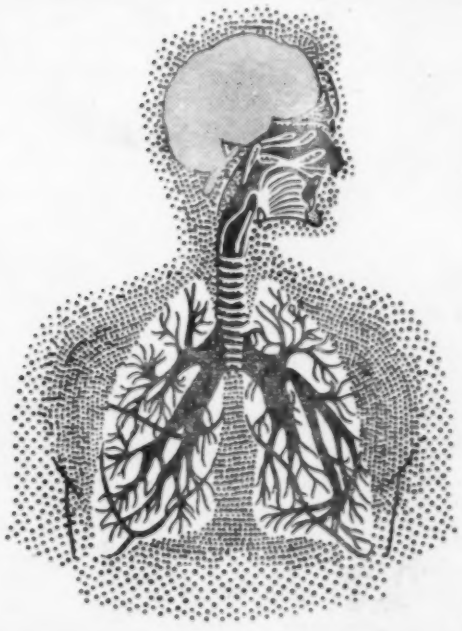

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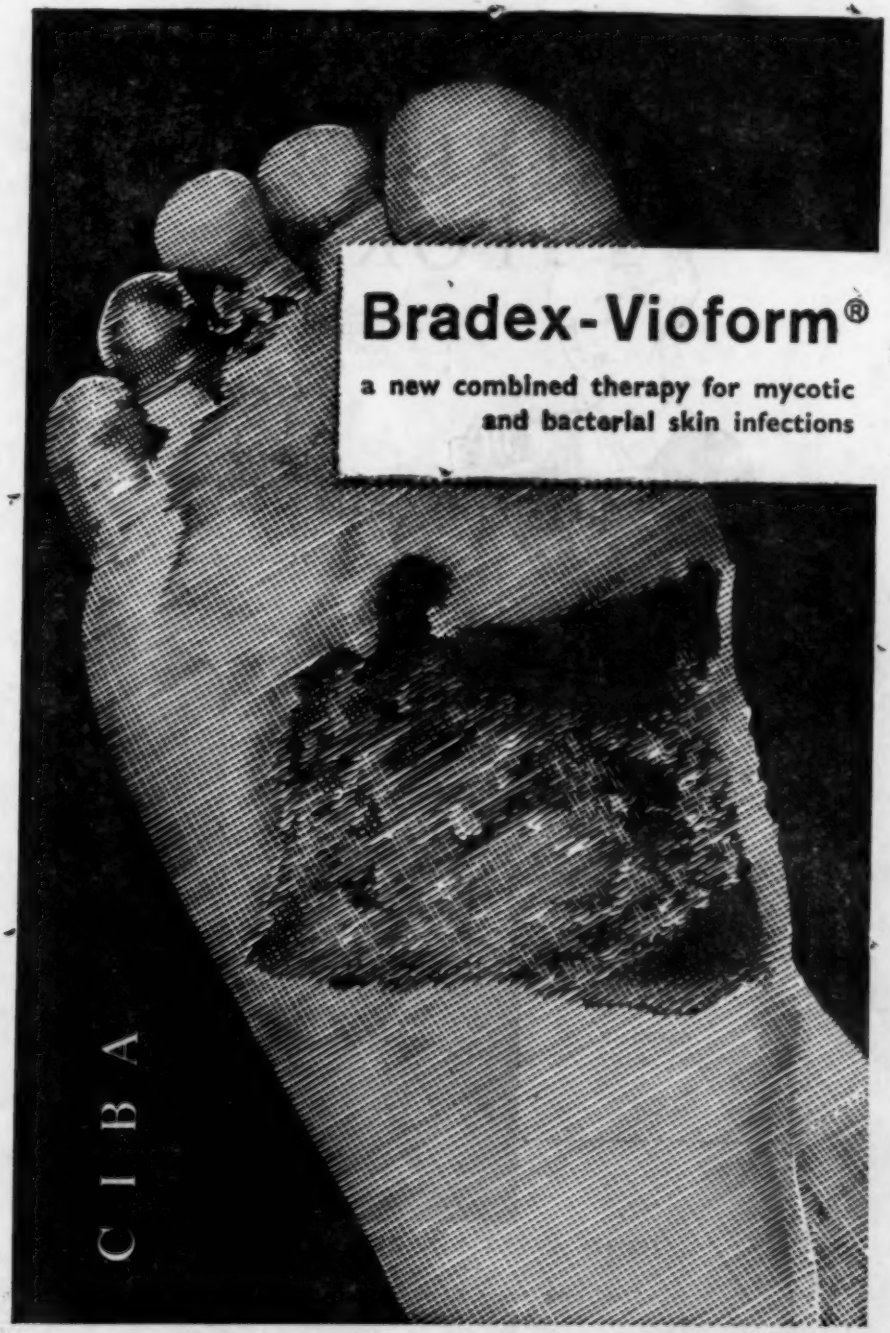
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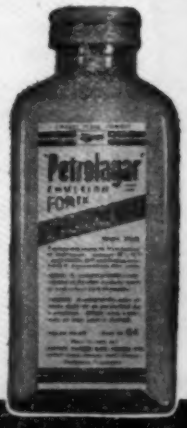

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ORIGINAL ARTICLES

HEPATIC COMA, ITS INCIDENCE, CAUSATION AND MODERN TREATMENT

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During recent years medical science has made considerable advances in the pathogenesis of hepatic coma and this knowledge has given a new line of therapy which has produced a few remarkable recoveries. We have, therefore, thought it fit to publish this paper on hepatic coma, its incidence, exciting causes and modern treatment.

Hepatic coma is defined as the occurrence of neuro-psychological complications in a case of liver damage. In the early stage it is characterised by a change in personality which may either take a jovial or depressive form, later on there is confusion, hallucination, amnesia, tremors, irritability, etc. These are followed by drowsiness and coma. A very characteristic early sign is 'flapping tremor', reminiscent of the beating of a bird's wings—this is best demonstrated, if the patient holds his arms and hands in front of him with his fingers separated; rapid, irregular movements occur in bursts, with flexion and extension at the wrist and metacarpophalangeal joints. Some patients during coma become very noisy and restless and give a loud cry called the cholaemic cry.

PATHOGENESIS

Sherlock (1955) has described 3 important factors in the pathogenesis:

(1) Portal venous systemic collateral circulation.

(2) Defective liver cell function.

(3) Excessive production of some toxic nitrogenous substance in the intestine.

In the presence of well-marked portal venous systemic circulation, toxic nitrogenous products, produced in the intestine and normally detoxicated by the liver, are able to reach the nervous system without having passed through the liver. In such cases therefore hepatic coma can take place even in the absence of severe liver damage. In the presence of severe hepatic failure such as may occur in acute cytolytic necrosis, previously called acute yellow atrophy of the liver, detoxicating function fails completely and hepatic coma supervenes quickly and is invariably fatal. Increase in the failure of hepatic function may also be brought about by exertion, haemorrhage, infection, anaesthetics, morphia and barbiturates.

Excessive production of toxic nitrogenous substance in the intestine takes place in the presence of intestinal haemorrhage, administration of high protein diet, ammonium chloride, diamox, methionine and choline, etc., by the action of intestinal bacteria. It is the recognition of this group of exciting causes in recent years and their proper treatment which has resulted in some remarkable recoveries.

The exact chemical nature of this toxic substance is not yet known, but many people believe it to be ammonia and give large quantities of glutamic acid to convert it into non-toxic metabolite, glutamine.

INCIDENCE

Table 1 shows the incidence of hepatic coma, in the medical wards of Gandhi Memorial and

TABLE 1—SHOWING QUINQUENNIAL INCIDENCE OF HEPATIC COMA OBSERVED IN G. M. & ASSOCIATED HOSPATALS, LUCKNOW

Underlying pathology	Period of observation	Total No. of cases	No. of cases with hepatic coma
Cirrhosis of the liver	1947-51	238	7
	1952-56	469	22
Infective hepatifis	1947-51	152	6
	1952-56	354	15

Associated Hospitals during the last decade and reveals the facts that the number of cases of hepatic coma treated during the last five years were much greater than those treated in the previous five years. During this period, however, a larger number of cases of cirrhosis of the liver and infective hepatitis were also admitted and the percentage of the occurrence of hepatic coma in liver diseases during this quinquennial period remained the same as in the previous five years, that is about 5 per cent cases of cirrhosis of the liver, 4 per cent cases of infective hepatitis and 10 per cent cases of cholangiohepatitis went into coma. Our figure of 5 per cent hepatic coma in cases of cirrhosis of the liver is considerably lower than the 16 per cent of Epinger's and 11 per cent of Henrikson's series. This is probably due to the fact, that most of our cases of cirrhosis of the liver were not followed up till the end. Hepatic coma occurred in 4 per cent cases of infective hepatitis in our series which is much more than that reported by other workers. This is probably due to the fact that good many cases of infective hepatitis in our series did not take rest from the beginning of their illness. This is well illustrated by the case of an engineering student who visited the out-patient department on the 3rd day of his illness with well marked jaundice, was advised admission, but refused on account of some very important outdoor work. Four days later he was admitted in a comatose state and died sixteen hours after admission in the hospital. His fellow students revealed that he had been working for about 8 hours each day in the hot sun of the month of June.

Sex—In our series of 58 cases there were 42 males and 16 females, in 5 of whom hepatic coma was precipitated by pregnancy. Himsworth (1947) has mentioned that massive hepatic necrosis affects females more than males. Frerichs (1880) quoted by Himworth (1947) observed that of 164 cases in women, 66 were in-patients who were either pregnant or suckling. However, according to Sherlock (1956) the clinical course of the disease is similar to that in the non-pregnant woman ; if the pregnant woman is already suffering from nausea and vomiting, this is greatly accentuated, otherwise the course is mild and the mortality probably no greater than that in the non-pregnant despite the relatively high mortality in one small selected hospital series. It has been estimated that virus hepatitis is the cause of death in one out of 28,000 deaths during pregnancy.

Exciting Causes—Till a few years ago, the usual teaching was that severe hepatic failure, such as occurred in acute yellow atrophy of the liver, was the main cause of cholaemia. But recently we have learnt that hepatic coma may also rarely take place in cases in whom the liver damage was not severe, provided some exciting cause increasing the production of some toxic nitrogenous substance from the alimentary canal was present. During the last 2 years we have been carefully looking out for the exciting cause in cases of coma admitted in our wards or seen in consulting practice by one of us (B. B. B.). The result of our observations is given in Table 2. It is quite obvious from this table that intestinal haemorrhage is the most common exciting cause of hepatic coma. In cirrhosis of the liver, when any case begins to show mental changes, one should carefully examine the stools and vomit for presence of blood. Lately in one case it was thought that aspiration of the ascitic fluid had precipitated coma but a few hours later he started passing copious tarry stools and it became obvious that haemorrhage from the oesophageal varix was the cause of hepatic coma ; with proper treatment we were successful in reversing the coma. Similarly, another case whom we had labelled exciting cause 'not known' passed a jet black constipated tarry stool, fifty-eight hours after the appearance of the mental symptoms. It is our practice now to have

TABLE 2—SHOWING ANALYSIS OF THE EXCITING CAUSES OF HEPATIC COMA IN 28 CASES OBSERVED DURING 1955-56

Underying pathology	Exciting causes and No. of cases under each head						
	G.I. haemorrhage	Acute infection	Ammonium chloride	Diamox	High protein diet	Pregnancy	Unknown
Cirrhosis liver (14 cases)	5	—	1	2	1	—	5
Infective hepatitis (9 cases)	2	—	—	—	—	5	2
Cholangiohepatitis (3 cases)	1	2	—	—	—	—	—
Undiagnosed (2 cases)	—	—	—	—	—	—	2

the bowels moved with enema in constipated cases and to have the stool examined for the presence of blood.

In two cases of cirrhosis of the liver the onset of mental symptoms was brought on by the administration of diamox as a diuretic for the relief of ascites. Both these cases recovered when the drug was stopped and proper treatment instituted. In one case of cirrhosis of the liver the hepatic coma was brought on by ammonium chloride prescribed from the out-patient department ; his life could not be saved. Similarly in another case the mental symptoms were brought on by large doses of procaseinol and syrup neo-methidine. He also recovered after these drugs were stopped and modern treatment instituted.

In the infective hepatitis group, the major precipitating cause in our series was pregnancy. During the last two years, we had 5 pregnant women with hepatic coma. How pregnancy contributes as an exciting cause is not properly understood but most writers have stressed that the occurrence of infective hepatitis in the 3rd trimester should be regarded as a serious illness. All our 5 cases were in the third trimester. In two cases of infective hepatitis, coma was precipitated by severe epistaxis followed by swallowing of blood and passage of tarry stools. In one case, coma (as described earlier) followed excessive physical exhaustion.

In all the cases of cholangiohepatitis coma was precipitated by superadded acute infection.

Treatment

Prophylactic—Physical exertion should be avoided in all cases of liver damage. In diet, excess of protein must be avoided, also the use of aminoacids like methionine and choline. In the past great stress was laid on restriction of fats and people have been fed for days and weeks on fat-free diet, but recent observations by Hoagland *et al* (1946) have shown that moderate amount of fat in the diet does no harm to these people and goes a long way in providing the needed calories. However the main diet for this type of case is carbohydrates supplemented with vitamins. It is also obvious that in all these cases, drugs like diamox, ammonium chloride, urea must be avoided because they lead to larger liberation of ammonia or some similar toxic nitrogenous substance from the alimentary canal, which the damaged liver is not able to detoxicate. Excessive use of sedatives like pethidine, morphia and barbiturates should also be avoided, as they further reduce the activity of a damaged liver. Acute infection and haemorrhagic tendencies should be promptly controlled.

Supportive—During the years 1947-1950 the main treatment consisted of nursing, use of small amounts of glucose transfusion, about 100 c.c. of 25 per cent solution in 24 hours, and the administration of some biliary antiseptics like hexamine, felamine, etc. During this period, we were not able to cure a single case of hepatic coma. During the years 1951-54 similar line of treatment was adopted but in addition vitamins C, K, and B complex were administered and also aminoacids and proteins. In addtion to biliary antiseptic, some antibiotics like penicillin and streptomycin were also used. During this period again, we failed to cure a single case. During the year 1955, we started giving larger amounts of glucose transfusion about 500 c.c. to 1000 c.c. per day and also started administration of broad-spectrum antibiotics like achromycin—gave up the use of biliary antiseptics, as well as aminoacids like methionine, etc. During this period we were able to cure 3 cases out of 15. During the present year, we have had 13 cases so far out of which we have been able to cure six. We are now giving even larger amounts of transfusion—1000 to 1500 c.c. per day—of 25 per cent glucose solution. We are giving achromycin, one capsule every six hours by mouth or through nasal feeding. We have given about 50 to 100 g. daily of glutamic acid which, according to some writers, helps to convert the toxic ammonia or some other similar nitrogenous substance into non-toxic glutamine. Achromycin given by mouth helps to kill the intestinal bacteria which are responsible for converting proteins in the alimentary canal into toxic nitrogenous substances, large transfusions, besides providing the necessary calories. In the last 2 cases of the series under review prednisolone 10 mg. every six hours was also used.

In all the cases, in which hepatic coma was precipitated by intestinal haemorrhage, efforts were made to control bleeding by the administration of coagulant drugs and to prevent the entry of blood in the intestines, by continuous suction through a Ryle's tube—if the haemorrhage was extensive blood transfusions were given. So far we had no occasion to use an oesophageal tube carrying a small baloon at its end, which is in common use in these days for the control of bleeding from the oesophageal varix.

We also attribute our large recoveries to the better management of the comatose patients—this consisted of routine 6-hourly nasal feedings which helped in the prevention of the occurrence of aspiration pneumonia, and in the proper maintenance of water and electrolyte balance the disturbance of which was diagnosed by frequent biochemical estimations and electro-

cardiographic records. However, the major advancement was in the treatment of pulmonary oedema, which invariably occurred in our experience in all cases of hepatic coma towards the end —even in those in which large transfusions were not given. The pathogenesis of pulmonary oedema in cases of coma is not yet understood, but it is quite a common and serious complication. In our last two cases, both of which recovered, this complication was overcome by repeated bronchial aspiration with an electric aspirator. We are giving below a brief history of our last case which recovered after being deeply comatose for 8 days.

Case Reports

S.S., a young male, aged 22 years, was admitted to the medical wards in September 1956 with complaints of fever with shivering—5 days, nausea, vomiting and jaundice—3 days and drowsiness—1 day. He gave a past history of having suffered from amoebic hepatitis 2 years ago and cholecystitis 1 year ago. 5 days ago he started having fever with shivering, was diagnosed as malaria and prescribed camoquine. On 2nd day of fever he had some nausea, vomiting and found that the urine was of dark orange colour. On the 5th day of his illness when he became drowsy he sought admission to the hospital. His liver was 1½ fingers below the costal margin and tender. The spleen was just palpable. Jaundice was well marked and he was confused and showed very typical flapping tremors. The urine showed the presence of bile pigments and bile salts. Vomit was of dark brown colour and showed the presence of a large number of R.B.C.'s, stools were of tarry black colour. W.B.C. count was 16,500/c.mm. with polymorph 80 per cent and lymphocytes 20 per cent.

Diagnosis of hepatic coma secondary to infective hepatitis was made. It was thought that haematemesis was precipitated by some stomach irritant and was not due to oesophageal varix. Treatment as outlined above was started. He became deeply comatose on the following day and remained in that state for 8 days. To our great surprise he showed signs of recovering consciousness on the 8th day and was fully conscious by the 12th day. He developed marked pulmonary oedema on the 5th day of his coma and the air passages were kept free by repeated bronchial aspiration with an electric aspirator. Besides other treatment, on the 6th day of coma cortisone therapy was also started. He is the first case in our experience who recovered after being comatose for 8 days and we therefore thought that he was worthy of this record. Liver biopsy done on 6-10-1956 showed the following pathological state in his liver :

Section showed 2 thin strips of liver tissue with prominent strands of fibrous tissue traversing the liver tissue. These strands showed sparse infiltration with neutrophils and a few lymphocytes. A number of liver cells were found swollen with markedly fenestrated and vacuolated cytoplasm. The liver cells also showed some evidence of regeneration. No evidence of necrosis or fatty change was present and some of the bile canaliculi were dilated and contained inspissated bile.

The diagnosis was mild diffuse hepatic fibrosis with bile stasis.

Discussion

One of the important therapeutic measures on which general agreement seems to have existed is rest in bed : but recently this well established fact has also been challenged by careful investigations carried out on different batches of American soldiers suffering from infective hepatitis. However, it is the experience of clinicians that rest does help in the recovery of these and undue exertion might lead to hepatic coma.

The optimum diet for such cases has also been changing from decade to decade. A few years ago such cases were treated on absolutely fat-free diet and then as a result of certain investigations reported in the literature it was said that fat could be given freely to such patients. We do not advocate fat-free diet nor are we inclined to give such fatty meals which are taken by well-to-do Indians. After the animal experiment work of Himsworth (1947) it became fashionable to treat cases of liver damage on high protein diet further supplemented with such aminoacids as methionine and choline The average Indian practitioner is still accustomed to prescribe a large amount of methionine, choline and proteolysed proteins to his patients of liver diseases. It is high time that a warning was sounded against such practice, and for the time being it was taught that the optimum diet for cases of liver damage was high carbohydrate with average protein and average fat.

Turning to the medical treatment of hepatic coma there seems to be a consensus of opinion about the administration of large transfusions of glucose and use of broad spectrum antibiotics. Administration of large doses (about 100 g. per day) of glutamic acid by the oral or parenteral route is still in a controversial state. It would therefore be profitable if well-controlled observations were made to find out the real utility of this drug. The series of cases studied by us are too few to offer a definite opinion on the utility of this drug. Similarly, the use of ACTH and cortisone is also in a controversial state. It is advocated in large doses particularly in such cases where hepatic coma has supervened on infective hepatitis. Here again the number of cases in our series is far too few to express a definite opinion. In two of our cases at any rate the corner seems to have been turned after the administration of cortisone and we feel that further controlled trial should also be given to this drug.

SUMMARY

The paper deals with 58 cases of hepatic coma observed at Gandhi Memorial & Associated Hospitals, Lucknow, during the period 1947-1956. The modern conception of hepatic coma, its early physical signs and exciting causes have been reviewed.

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ALCALIGENES FAECALIS* INFECTION—ITS INCIDENCE IN CALCUTTA

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While working as a senior clinical pathologist in Lake Medical College Hospital, Calcutta, during the years 1947-49, one of us had to do a number of blood cultures as a routine, specially of the suspected enteric cases. While typhoid and paratyphoid bacilli were isolated from the blood of many of these patients suffering enteric-like infections another type of organism was recovered in pure culture from the blood of a fair number of similar cases. The essential features of this latter organism were: it was a Gram-negative bacillus, and produced typhoid-like colonies in MacConkey plate, but differed widely from the enteric group of organisms by its absence of any fermentative power, and it turned litmus milk alkaline. Subsequently, similar organism was isolated in various other disease processes from materials such as cerebrospinal fluid, abscess pus, urine, joint fluid, peritoneal fluid and bile. In some cases, the bacillus could be isolated from blood and other pathological materials on more than one occasion from the same patient, taking all precautions against outside contamination. The organism was identified to be *Bacterium faecalis alkaligenes* and subsequently these cases formed the subject matter of a publication (Banerjee and Sarkar, 1949).

One going through the literature, it was found that since the discovery of the bacillus in the year 1889 by Petruschkey, a good number of cases (more than 200) of infection by this organism producing enteric-like fever, meningitis, abscesses, peritonitis and other clinical conditions—mostly from tropical countries, have been, and are being, reported in reputed journals throughout the world (Shearman and Moorhead, 1916; Watson, 1921; Goldberg, 1938; Raeburn, 1944; and others). So when during our work in the Bacteriology Department of the Calcutta Medical College, similar isolations were made, rather frequently, from pathological specimens of patients of different wards of Calcutta Medical College Hospitals, the authors thought it worth while to focus the attention of the clinicians and bacteriologists to this organism and its probable pathogenic role in the causation of various disease processes prevalent in Calcutta area.

The systematic study (including taxonomy) of the 200 strains and the experimental proof of their pathogenicity form the subject matters of separate publications.

METHODS AND MATERIALS

The materials were obtained from the indoor patients of Calcutta Medical College Hospitals and standard techniques of cultural procedures were adopted throughout the work. In view of the prevalent belief of doubtful pathogenicity about this organism, all possible precautions were taken to avoid outside contaminations and only cases from whom these organisms were isolated in pure culture were considered suitable to be included in the present series.

RESULTS

In a total of 1960 consecutive blood cultures undertaken in the Bacteriology Department of the Calcutta Medical College during the period of three years (1952-1954), *Alcaligenes faecalis* could be recovered from the blood of 93 patients. Of these 93 patients, 71 clinically resembled enteric fever cases and 14 were cases of remittent or intermittent fever simulating atypical enteric fever cases, two were cases of puerperal fever, two were cases of high fever during late pregnancy, one was a case of fever after abortion, and three cases were clinically sub-acute bacterial endocarditis. Apart from these cases of pyrexia with positive

* Also called *Bacterium faecalis alkaligenes*, *Bacterium alkaligenes* and *Vibrio alkaligenes*.

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blood cultures there were six cases of long continued pyrexia, not presenting typical enteric picture, from whose urine *Alcaligenes faecalis* was recovered in pure culture. No organism could be isolated from blood of these patients. The clinical picture of the majority of these 99 cases justified them to be labelled as enteric although toxaemia was not a marked feature in many of them. The majority had leucopenia and alkaline reaction of the urine. The blood of 32 of these cases was examined for specific agglutinin against their own strains of *Alcaligenes faecalis* (Table 1). Of these, 23 showed specific agglutinin and nine had none. The titre of agglutinin was, however, low in comparison with *S. typhi* agglutinin titre in cases of typhoid fever.

Results of Widal test of 93 cases with positive blood culture are shown in Table 2.

TABLE 1—SHOWING AGGLUTININ TITRE OF 32 OUT OF 93 CASES OF PYREXIA TESTED AGAINST AUTOSTRAIN OF *A. faecalis*

No. of cases	Highest titre of agglutination	Feriod of pyrexia when blood was tested
1	1 in 1250	End of first week or beginning of second week
1	1 in 500	
1	1 in 250	
1	1 in 125	
6	1 in 50	
2	1 in 25	
11	1 in 10	
9	nil	

TABLE 2—SHOWING ANALYSIS OF THE RESULTS OF WIDAL TEST OF 93 CASES (WITH POSITIVE BLOOD CULTURE)

Both T_H and T_O positive in dilution of 1/500	... 2 cases
Both T_H and T_O positive in dilution of 1/250	... 2 cases
Only T_O positive in dilution of 1/250	... 8 cases
Only T_O positive in dilution of 1/125	... 8 cases
Only T_O positive in dilution of 1/83	... 8 cases
Only T_H positive in dilution of 1/250	... 2 cases
Only T_H positive in dilution of 1/25	... 2 cases
Both T_H and T_O positive in less than 1/83	... 27 cases
Completely negative Widal	... 27 cases
Widal not done	... 7 cases

Apart from the six cases of pyrexia from whose urine *A. faecalis* was isolated, there were 52 patients in obstetrical and gynaecological wards, whose urine was positive for this organism. Of these 52 patients, 46 gave history of recent delivery or abortion. Other 6 cases were with high fever during different periods of pregnancy. The total number of samples of urine from the obstetrical and gynaecological wards during the period was 1762.

There were 3 cases of cerebrospinal meningitis during this period, two cases of abscess, one case of pericardial effusion, one case of pleural effusion, and one case of peritonitis in a child. From all these cases, *A. faecalis* was isolated in pure culture (from C.S.F., pus, pericardial fluid and peritoneal fluid).

Seasonal incidence—It was noticed that the number of blood cultures positive for *A. faecalis* varied in different seasons of the year. During the 3 years (1952-54) the number of isolation of *A. faecalis*, month by month is shown in (Fig. 1).

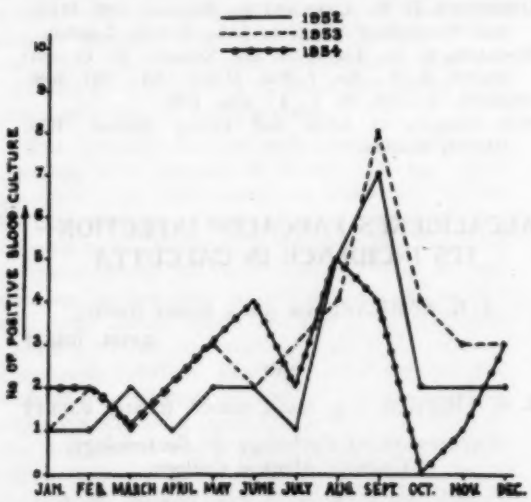

FIG. 1—SHOWING THE NUMBER OF BLOOD CULTURES POSITIVE FOR *A. faecalis* MONTH BY MONTH (1952-1954)

It becomes quite apparent that there is a definite rise of incidence of this infection in the post-monsoon period, i.e., August and September.

Age and sex incidence—Out of 93 febrile cases with positive blood culture, 34 were female and 59 male. 26 of the patients were children or infants below 12 years of age and 67 were above 12 years.

DISCUSSION

Out of the total number of 1960 blood cultures done in 3 years, mostly from suspected cases of enteric fever, isolation of 93 cases of *A. faecalis* is not a negligible incidence, when out of the same blood samples, total number of enteric group organisms (*S. typhi, S. para A, S. para B*) isolated, were 267. In some cases repeated blood cultures showed the same organism, but in many others this was not successful due to early institution of chloramphenicol therapy (the organism has been found to be highly susceptible to chloramphenicol). Its isolation in pure culture from 52 samples of urine (out of a total of 1752 samples cultured

from obstetrical and gynaecological wards) is also significant. Presence of this organism in C.S.F., pleural and pericardial fluid, and abscess pus was also demonstrated in several cases.

From the review of literature, it becomes quite apparent that most of the reported cases of *A. faecalis* infection have occurred in the tropical and sub-tropical countries like India and Egypt, although cases have occasionally occurred in other parts of the world. The importance of this organism in the causation of disease processes especially enteric-like fever in Calcutta was stressed by Chaudhuri (1944), and Banerjee and Sarkar (1949) and in other parts of India by Watson (1921), Row (1926) and Wasti (1945).

Pyrexia resembling atypical enteric fever of milder nature, where Widal test for enteric group of organism is completely negative, is not rare in the experience of physicians practising in Calcutta. Cultural work is not usually undertaken in such cases. Some of them are vaguely referred to as 'Calcutta fever' and so on. A few of them, if thoroughly investigated by cultural examination, may reveal infection by *A. faecalis*.

Diagnosis will have to depend on bacteriological isolation of the organism. Estimation of agglutinin in blood is not satisfactory for this purpose. The seasonal incidence in Calcutta area can be partially explained by the prevalence of gastro-intestinal disturbances immediately after the rains providing a foothold to any invading organism. We agree to a great extent, with the conclusions of Wasti (1945), "the possibility of 'parenteric fever' should always be borne in mind in the pyrexia of unexplained origin in the tropics."

From the volume of published work and the present series, it is suggested that the organism can play pathogenic role in various disease processes specially enteric-like fever, particularly in the tropics, and the organism when isolated from pathological material should not be summarily disposed of as a contaminant.

In cases of enteric-like fever of comparatively low toxicity with negative Widal reaction, and alkaline urine, possibility of infection by *A. faecalis* should be remembered in the tropics.

Summary

During the course of three years in the Bacteriology Department of Calcutta Medical College, *A. faecalis* was isolated from 93 samples of blood out of total number of 1960 blood samples cultured, 58 samples of urine, 2 samples of C.S.F. one sample of pleural fluid, one sample of pericardial fluid and two samples of abscess pus.

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ADELPHANE IN ESSENTIAL HYPERTENSION

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An ideal hypotensive drug is expected to be consistently effective by mouth, to have a period of activity of about 8 hours, and to be free from side-effects (Kauntze, 1957). In spite of the number, no such drug is currently available and the majority of hypertensive patients require two or more drugs in combination for adequate treatment. Serpasil (reserpine) on its own, however, has a low toxicity and, apparently, it can be taken indefinitely without the development of tolerance or addiction. In addition it produces tranquillity without somnolence, is safe in the presence of cardiac, renal and cerebrovascular complications, and potentiates other hypotensive drugs. On account of these therapeutic advantages serpasil has won a preferential status in the treatment of all forms of hypertension and is now the backbone of nearly all the successfully reported hypotensive combinations.

The following clinical study deals with the ambulatory treatment of essential hypertension with adelphane which is a combination of reserpine and di-hydralazine. Good results have already been reported in most patients with mild or moderate hypertension and frequently in those with severe hypertension by Naegele *et al* (1955)

with a combination of rauwolfia and hydralazine. For two reasons, however, the present report is considered worthwhile. Firstly, di-hydralazine is preferable to hydralazine on account of its quicker and more prolonged action (Carere-Comes, 1954), greater effectiveness in small doses (Ricci 1953/1954), more pronounced effect on the diastolic blood pressure (Carere-Comes, 1954), greater consistency of action in individual cases (Villa and Grottaglie, 1954), and less frequent and less disagreeable side-effects (Brichta *et al*, 1953; Esselier *et al*, 1953; Ricci 1953/1954; Carere-Comes, 1954; Carli, 1954 and Villa and Grottaglie, 1954). Secondly, it is customary to study the effect of a hypotensive drug on basal blood pressures. From the point of view of the patient's capacity for work, however, it may be more, if not equally, important to know the state of affairs while he is engaged in his daily work. The results indicate, given over a prolonged period in comparatively small doses, adelphane will satisfactorily reduce both the ambulatory and the resting blood pressures in many cases of essential hypertension without irksome side-effects.

Material and Method

In all 37 cases treated during the period between October 1954 and July 1958 and followed up for a year and half or more are recorded here. 31 cases were males and 6 were females. The age incidence was 36 to 76 years. In 15 cases the disease was hereditary. According to the standards set by the Metropolitan Life Insurance Company Statistical Bureau, quoted by Dunlop *et al* (1953), 3 patients were asthenic, 14 of ideal weight and 20 were obese. The known duration of the disease ranged from 6 months to 18 years. On the basis of previous records 17 of the 37 cases were of the slowly progressive type. 20 cases had Grade I (Wagener and Keith, 1939) fundus, 13 cases had Grade II fundus and the remaining 4 had Grade III fundus. 9 cases had cardiovascular, renal or metabolic complications. 3 elderly patients were arteriosclerotic.

Before treatment, during the course of 2 to 4 weeks, the latest hypertensive state of a patient was carefully evaluated on the basis of previous history, presence or absence of symptoms, results of physical examination, blood pressure readings, retinal changes, electrocardiographic and radiological findings, sedimentation rates, blood counts and urine examinations. Where indicated, renal function was assessed by dilution and concentration tests, intravenous pyelography and determination of non-protein nitrogen. Blood pressure was taken personally by the same technique and with the same baumanometer always in the right arm. The 'ambulatory' reading was recorded immediately the patient reported for a check. Subsequently the blood pressure was taken every five minutes and the 'resting' reading was recorded when three consecutive readings were identical. For evidence of postural hypotension, if any, the ambulatory readings were taken with the patient first erect and then supine and the resting readings were taken with the patient first supine and then erect. To begin with, the blood pressure was taken about the same time daily. Later, as dictated by the response to treatment, the readings were taken less frequently, thrice, twice, or once a week only. Still later when the blood pressure was stabilised it was recorded once a month. To determine the duration of action of a particular dose at any stage of treatment blood pressure was checked 2, 4, 6 and 8 hours after its administration. In the uncomplicated cases the subsequent hypertensive state was re-assessed once in six months. In the remaining cases relevant examinations and tests were done as often as required. Diet was restricted only in the obese for the purpose of gradual weight reduction.

Adelphane was administered as follows: Initially one tablet of adelphane, was administered approximately at 6 A.M., 2 P.M. and 10 P.M. Subsequently the dose was progressively increased short of unbearable side-effects. The aim was to have a blood pressure normal or as near normal as possible. The actual dosage required for this purpose varied from patient to patient from 3 to 12 tablets a day. If a larger 8-hourly dose was not tolerated, or if the effect of a dose did not last approximately 8 hours, the drug was administered in divided doses more frequently at 6 A.M., 10 A.M., 2 P.M., 6 P.M. and 10 P.M.

Results

It was of interest to note that the response to treatment occurred in three phases—immediate, intermediate and distant. Had the treatment not been pursued to the distant phase it was likely that the drug would have been considered a failure during the intermediate phase. During the immediate phase the maximum response to the drug was obtained in 6 to 23 days. Subsequently the patient entered the intermediate phase during which the blood pressure showed a tendency to rise periodically or at irregular intervals during which necessary adjustments in dosage had to be made. The more the blood pressure was regulated at or near the normal the greater was the tendency for these rises to become less frequent, smaller and shorter. In 5 to 26 months the patients then

entered the distant phase during which the blood pressure was more easily controlled with doses of the drug comparatively smaller than those administered previously. During this phase the blood pressure was often remarkably constant from day to day. The patients were, however, still subject to periodic fluctuations as noted earlier under treatment with serpasil alone (Singh, 1955). Most patients were also very sensitive to cold and their blood pressure fluctuated considerably on the higher side when the atmospheric temperature was below 6°C. The response to standard exercise depended on the blood pressure levels, but it was only in the distant phase that the patterns described by Fowler and Guz (1954) reverted to the normal in 7 cases and nearly normal in 11 cases.

Both the systolic and the diastolic blood pressures were lowered, but the fall in the diastolic blood pressure was comparatively greater. Before treatment the mean ambulatory blood pressure was 222/121 (range 190-290/100-165) mm. Hg and the mean resting blood pressure was 190/114 (range 160-235/95-165) mm. Hg. After treatment the average ambulatory blood pressure was 175/95 (range 145-220/70-120) and the resting blood pressure was 140/80 (range 110-180/60-105). As a result of treatment the mean fall in the ambulatory systolic blood pressure was 47 mm. Hg. (21 per cent, range 2—40 per cent) against 50 mm. Hg. (26 per cent, range 12—43 per cent) at rest, and the mean fall in ambulatory diastolic blood pressure was 26 mm. Hg. (22 per cent, range 4—36 per cent) against 34 mm. Hg. (30 per cent, range 5—52 per cent) at rest.

The response was assessed on the basis of the effect of treatment on the diastolic blood pressure. The result was considered very satisfactory when after treatment the diastolic blood pressure was below 95 mm. Hg, satisfactory when it was 95 to 105 mm. Hg, and poor when it remained above 105 mm. Hg. According to the state of activity of the patients, the results were very satisfactory in 16 cases (46 per cent), satisfactory in 15 cases (43 per cent), and poor in 4 cases (11 per cent) during the ambulatory stage against very satisfactory in 31 cases (88 per cent), satisfactory in 3 cases (9 per cent), and poor in one case (3 per cent) at rest. In 2 cases treatment was discontinued (*vide infra*). The systolic blood pressure fluctuated considerably, especially during activity, but in 6 (38 per cent) ambulatory very satisfactory cases and 30 (97 per cent) resting very satisfactory cases the blood pressure was always below 160/95 mm. Hg.

Individual results were fairly consistent. Grade I patients were on the whole more sensitive to the drug than Grade II or Grade III patients. The factors which influenced the result adversely were very high initial blood pressure, fixed hypertension, advanced arteriosclerosis and the male sex. This was, however, not always the case—a point in favour of giving an initial trial to the drug in all cases.

There was nearly always evidence of some degree of postural hypotension but this was never so severe as to cause reactions. The pulse rate was slowed down by an average of 7 beats (range 0 to 12 beats). No deterioration in the hypertensive state was noticed in any case. On the other hand, there was marked improvement in Grade III fundi in 3 cases and in the cardiac condition in 6 cases, but the renal deficit in 5 cases remained unaltered.

In one Grade III case with diabetes mellitus, posterior myocardial infarction and urea retention there was a remarkable remission of hypertension after an attack of severe infective hepatitis and treatment with adelphane was discontinued. Subsequently the blood pressure had remained within normal limits for the last 20 months thereafter (upto the time of report) apparently as a result of which the fundus changes had appreciably regressed and the kidney function had improved to the extent that at the time of report there was no urea retention.

Side-effects—Side-effects were not troublesome. Muscular weakness, breathlessness, palpitation and headache were sometimes complained of in the beginning of the treatment and subsequently with each increase in dosage but these symptoms usually disappeared within a day or two. At times, especially during exertion and on exposure to cold, as indicated by the baumanometer, the heart's stroke-volume varied from beat to beat and the patient complained of palpitation. Cases of myocardial infarction and angina pectoris tolerated the drug well and no adverse effects were noted in their electrocardiograms. In one patient, however, even the initial dosage induced severe anxiety, palpitation, and tachycardia with a further rise in blood pressure and in this case the treatment had to be discontinued.

Discussion

Theoretically serpasil and di-hydralazine should provide a useful combination, serpasil for its central and di-hydralazine for its peripheral site of action. As both drugs have periods of optimum effect which substantially coincide with and potentiate each other a gradual and sustained fall of blood pressure in synergistic fashion should be expected and serpasil on account of its tranquillising and bradycrotic effects should make the administration of di-hydralazine easier. In a few

cases in which the effect of serpasil is slow, previous administration of serpasil for about two weeks may be necessary.

Whether after myocardial infarction and with angina pectoris hypertension should be actively treated may require careful assessment. Considerable lowering of blood pressure would be unwise on account of the risk of increased anginal pains or myocardial infarction or both. Fortunately, however, this risk appears to be rare and treatment of hypertension is usally associated with much symptomatic relief. In this respect the results obtained with adelphane have been gratifying. Nocturnal dyspnoea and oedema of the legs were relieved and breathlessness on exertion was considerably diminished. The beneficial effects were associated with an appreciable fall of diastolic blood pressure and probably helped by the adrenolytic and the sympatholytic properties of the dihydralazine component of the drug, increased coronary blood flow and fall in pulse frequency.

Except when the drug was not tolerated, there was no case in which it was not possible to lower the blood pressure appreciably by prolonged treatment with adelphane. Many patients after the initial fall, however, showed some degree of tolerance. The hypotensive action of a single dose of adelphane lasted from 3 to 10 hours and a regular supervision of the dose was necessary at this stage to keep the blood pressure at consistently lower levels. By doing so the progress of the disease was apparently halted and towards the end of prolonged traetment relatively small and easily tolerated maintenance doses were required. In some cases, however, the benefit may have occurred from reduction in weight.

On account of increased sensitivity of the patient to cold, good results are less likely in colder climate.

The remission of hypertension in a Grade III case following an attack of severe infective hepatitis is interesting. Whether the liver plays any part in the pathogenesis of hypertension has not been decided.

Summary

37 cases of essential hypertension were treated with adelphane over a prolonged period with comparatively small and easily tolerated doses. The response was assessed on the basis of the effect of treatment on the diastolic blood pressure during the course of day's activity and at rest. The results were considered very satisfactory in 16 cases, satisfactory in 15 cases and poor in 4 cases during the ambulatory stage against very satisfactory in 31 cases, satisfactory in 3 cases and poor in one case at rest. In 6 ambulatory very satisfactory cases and 30 resting very satisfactory cases the blood pressure was always below 160/95 mm. Hg. The mean fall in the ambulatory systolic blood pressure was 47 mm. Hg (21 per cent) against 50 mm. Hg (26 per cent) at rest and the mean fall in the ambulatory diastolic blood pressure was 26 mm. Hg (22 per cent) against 34 mm. Hg (30 per cent) at rest.

One case could not tolerate the drug at all, otherwise there were no troublesome side-effects. In another case, there was a remission of hypertension after an attack of severe infective hepatitis and treatment with adelphane was discontinued.

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MEPROBAMATE IN TETANUS

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Tetanus is a disease characterised by muscular rigidity and repeated reflex spasms in a conscious patient. A fully conscious mind with the painful

experience of spasms is tense and anticipating. This probably increases the frequency of spasms and rigidity. Hence, tranquillisation has been an important measure in the treatment of tetanus. Tranquillising measures such as seclusion in quiet, dark, cool rooms and sedatives such as paraldehyde, barbiturates are well-known in the treatment of tetanus; but these measures are not always fully adequate to control spasms. Moreover, these centrally acting sedatives have an added risk of producing central depression.

Muscle relaxants acting peripherally, such as mephenesin, tubocurarine, succinylcholine are also being used recently. None of them, however, has proved uniformly successful and some of them even give rise to dangerous side-effects such as haemoglobinuria, pulmonary oedema, etc. (Hewer and Woolmer, 1947; Wilson and Gordon, 1948; Goodman and Adriani, 1949; McIntyre, 1953). Use of tracheotomy and continuous anaesthesia producing a state like paralytic poliomyelitis, maintained with artificial respiration for prolonged periods—as first propounded by Lassen *et al* (1954), though life-saving at times, require constant skilful attention and adequate laboratory facilities. This restricts its usefulness in a hospital where the number of cases of tetanus admitted in a year is too large. Even these measures are not without their ill-effects, viz., bone-marrow aplasia, myocarditis, etc. (Lassen *et al*, 1954 and 1956; Wilson *et al*, 1956). Treatment of tetanus is thus beset with twin difficulties of inefficiency and toxicity.

Method and Material

We decided to study in cases of tetanus, the usefulness of meprobamate which has the merits of simultaneous muscle relaxing and ataraxic action, easy administrability, oral effectiveness and low toxicity. In all, 66 cases of tetanus admitted in V. S. General Hospital, Ahmedabad, were taken up for this study. At first every alternate case was selected for treatment with meprobamate in addition to the standard treatment.* With early successful results with meprobamate, however, later, many consecutive cases were selected for treatment with meprobamate. Thus group I consists of 27 cases treated with standard line of treatment and group II consists of 39 cases treated with meprobamate in addition.

Meprobamate: Meprobamate was given orally in six-hourly doses of 800 mg. in adults and proportionately smaller doses in children continuously, till cure or death occurred. It was omitted in a few cases which showed complications, but only temporarily.

A detailed history of the patient was taken in the beginning; daily and sometimes frequent appraisals of the condition of the patient was done in the course of the disease. A close watch was particularly kept for the complications of meprobamate; repeated blood counts were done in serious patients; no tracheotomy was carried out in any case. All cured patients were followed up and were called, for noting any residual complications, a week after discharge.

Clinical Observations and Results

The interval between the first symptom and the appearance of spasms is said to be the single most important factor determining the prognosis of the case (Cole, 1953). Cases with the period of onset less than 24 hours had higher mortality (50 per cent in group I and 33 per cent in group II) than those with period of onset more than 24 hours (19·06 per cent in group I and 18·5 per cent in group II).

Taking age, type of injury, incubation period, period of onset and previous administration of prophylactic A.T.S. as the guiding factors determining the outcome in individual cases, they were typed as mild, moderate, moderately severe and severe; age below 5 years or above 50, crush and badly mauled injuries as well as injuries near the head and the face, incubation period of less than 7 days and period of onset less than 48 hours, were taken as individual factors indicating serious prognosis; prophylactic administration of A.T.S. was taken as a factor reducing the seriousness of the case; combination of all these factors was taken as indicating the true severity of the disease and the cases were thus typed accordingly.

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* Standard treatment is considered under the following heads:

Tetanus antitoxic serum—Every adult case on admission was given 60,000 units intramuscularly and 40,000 units intravenously; children below 5 years of age were given 60,000 units intramuscularly only with necessary precautions.

Care of the wound—All the wounds were cleaned and dressed with antibiotic ointment.

Nutrition—Feeding by stomach tube was instituted in every case that had severe lock-jaw; others who could open the mouth and swallow were given fluid diet orally.

Antibiotics—Crystalline penicillin G, 500,000 units intramuscularly was administered twice a day. In some cases erythromycin 200 mg. three times a day was administered orally or by stomach tube.

Sedation—Every adult case as judged by the severity and frequency of spasms was given six-hourly, eight-hourly and twelve-hourly intramuscular injection of 7 c.c. of paraldehyde, alternating with 3 grains of sodium phenobarbitone, intramuscularly. Children received proportionately lower doses, but the frequency of administration was similar.

From Table 1, it is evident that both the groups were broadly comparable as far as the severity was concerned.

TABLE 1—SHOWING MORTALITY AND SURVIVAL RATES IN GROUPS I AND II

Clinical state	Group I			Group II		
	No. of cases	Deaths	Survival	No. of cases	Deaths	Survival
Mild ...	8	1	7	12	nil	12
Moderate ...	9	2	7	15	3	12
Moderately severe ...	7	2	5	9	4	5
Severe ...	3	3	nil	3	2	1
Total ...	27	8	19	39	9	30

Duration of the stay of cases which survived was 8 to 26 days in both groups ; death in majority of cases that died, occurred within 48 hours of admission (7 in group I and 8 in group II).

The causes of death in either group are analysed in Table 2.

TABLE 2—SHOWING THE ANALYSIS OF THE CAUSES OF DEATH IN THE SERIES UNDER REVIEW

Cause of death	Group I	Group II
Laryngeal spasm ...	2	5
Pulmonary oedema ...	5	4
Respiratory depression ...	1	0

COMPLICATIONS

In group I the usual complications of serum injection were noticed.

In group II drowsiness alone or with restlessness, semiconsciousness with pulmonary oedema and venous thrombosis were encountered.

DISCUSSION

From the mortality and survival rates in both the groups it is evident that the percentage survival in group II cases (those treated with meprobamate), viz., 76·9 per cent is better than in group I cases (those receiving standard line of treatment), viz., 70·5 per cent. The difference is 6·4 per cent. However, applying the statistical method of X^2 (Chi-square) determination to Table 1, the Chi-square value with one degree freedom is 0·278, which means that the defference is not statistically significant. Addition of meprobamate did not shorten the duration of stay of the survived patients in the hopital—both the groups showing the same range of duration, i.e., 8 to 26 days. Thus meprobamate does not seem to have altered significantly the course of the disease. On further analysis of the mortality figures, it will be seen that whatever beneficial influence the addition of meprobamate has exerted, has been only in mild and moderate types of cases, while there has been no difference in the moderately severe and severe types of cases. This beneficial effect of meprobamate in mild and moderate types of cases is worthwhile investigating further in a larger number of cases of such types, since the number of cases of these types in both the groups in this series has not been large enough for the application of reliable statistical yardstick. The tranquillizing and muscle relaxing action of meprobamate is not sufficiently strong to control the spasms and rigidity of tetanus. One of the reasons for its failure may be its long induction period, the patient succumbing to the disease before the drug could have its maximum action.

Side effects—In the present series, drowsiness and semiconsciousness was observed in four cases: one case recovered in spite of continued administration of the drug ; another case required reduction of the dosage ; in the other two cases the drug was omitted temporarily for a few days, but was reinstated in full doses a few days later without any side effects. This corroborates the experience of Borrus that drowsiness disappears on its own after the first few days of the treatment.

Restlessness following withdrawal of the drug was noted in one case, but many other factors such as thrombophlebitis, high blood pressure, old age, could account for the same and it is significant to note that restlessness diminished after blood pressure was brought down to normal with reserpine. One case had high fever after he recovered from semiconscious condition and he also had signs of pulmonary oedema ; whether the febrile reaction was due to bronchopneumonia or due to the drug could not be made out but nevertheless the drug was continued and the fever subsided after five days.

The morbilliform skin rashes associated with itching in group II cases, could be ascribed to meprobamate sensitivity. However, they were not serious and they disappeared after administration of antihistamines, although meprobamate was not omitted.

Thrombophlebitis and venous thrombosis observed in one case each, are probably the result of prolonged confinement to bed.

Thus, drowsiness was a common complication, restlessness and febrile reaction were observed in one case each and skin rashes could be doubtfully

ascribed to the drug. None of these side-effects were serious and no haematological abnormality was found.

In conclusion, it may be said that meprobamate did not prove of any greater efficacy than the standard line of treatment in tetanus. The side-effects due to the drug were few and minor and the drug can be said to be a very safe medication even in the high dosage (3,200 mg. daily for 8 to 26 days in adults).

Summary

27 cases of tetanus were treated with standard line of treatment and 39 cases were treated with meprobamate in addition. Severity of both the groups was comparable as determined by known factors, guiding the prognosis.

Addition of meprobamate lowered the mortality by 6·4 per cent, but this was not statistically significant.

Side-effects of meprobamate were few.

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ENTERIC FEVER IN CHILDREN

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This paper is a record of clinical observations seen in 30 cases of enteric fever in children. The disease is seen in endemic and epidemic forms in Saurashtra. The ignorance of the primary health principles, the lack of personal hygiene, inadequate and at times horrible local sanitary conditions and last but not the least, the reluctance of the public to have prophylactic inoculations, even though given free, are the various factors responsible for the causation and spread of this disease.

Aetiology

The chief source of infection is usually through a human being, either an active case of enteric fever or a carrier. Contaminated water, milk and other articles of food act as vehicles of the specific pathogenic organisms and spread the disease.

Age incidence—The disease is rare in infancy and it is difficult to recognise the disease in infancy unless cultural examinations of the stool or blood are made to isolate and identify the specific bacteria. In infants the chief clinical manifestations are irregular fever, abdominal distension, diarrhoea and vomiting. In this series of 30 cases no case was below the age of 3 years (Table 1).

Table 1—Showing Age Incidence in the Series under Study

Age in years	No. of cases
4	1
5	4
6	2
7	3
8	5
9	1
10	7
11	2
12	5
	30

Sex incidence—Sex does not have any relation to the occurrence of this disease. The disease was almost equally distributed among both the sexes. There were 17 males and 13 females.

Seasonal incidence—The highest number of cases was in the mouth of August (Table 2).

Table 2—Showing the Seasonal Incidence in the Series under Study

Month	No. of cases
January—May	3
June	3
July	5
August	11
September	4
October	4
	30

Coincidentally during the months of June, July and August, the other enteric infections are also very common in children. During these months the fly population assumes a menacing proportion and they act as the principal agent in the spread of enteric diseases.

Mode of onset—It was gradual in 28 cases and acute and sudden in 2.

The initial symptoms of the disease are given in Table 3.

TABLE 3—SHOWING THE SYMPTOMS AT THE ONSET OF THE DISEASE

Symptom	No. of cases
Fever only	16
Fever and cough	6
Fever and pain chest	1
Fever, pain chest, pain abdomen and headache	1
Fever, cough and pain abdomen	1
Fever and headache	3
Fever, headache and pain abdomen ...	1
Fever, cough and vomiting	1
Fever, cough and delirium	1
Fever, restlessness, sleeplessness, cough and aphasia	1

CLINICAL FEATURES

This disease being a febrile one, fever is the most important and prominent of all symptoms. In children the temperature does not follow any regular pattern but is variable in its type.

Fever was continuous in 5 ; remittent in 4 ; intermittent in 6 ; first remittent and then intermittent in 9 ; first continuous, then remittent and then intermittent in 2 ; first remittent, then touching normal for a day or two and then intermittent in 4 cases.

It was low in 3 ; moderate in 21 ; and high in 6 cases (3 cases with high temperature expired).

2 cases had fever with rigors during the course of the disease.

Duration of the fever before admission in the hospital was 3 days in 1, 4 days in 1, 8-14 days in 19, 14-21 days in 7, and above 21 days in 2 cases.

63 per cent of cases were brought to the hospital for admission during the 2nd week and about 23 per cent were brought during the 3rd week of the disease. Early admission was sought in only 2 cases with acute outset.

The pulse acceleration was proportional to the rise of temperature in 21 cases. There was relative tachycardia in 7 cases. In only 1 case (age 12 years) there was relative bradycardia. In one case dicrotic pulse was felt.

The course of the temperature varied considerably. On an average it was between 20-40 days. In 50 per cent of cases the fever lasted from 20-27 days. Maximum duration was 52 days in one case and minimum was 17 days in one case —in both these cases chloromycetin was not given.

Vomiting was found at onset in 10 per cent of cases. In one case it occurred on the 18th day.

Cough was present in all cases. It may be slight or pronounced. Being such a common symptom it is considered not as a symptom of bronchitic complication but as a symptom of the disease itself. It is usually an early symptom. It was present at onset in 8 cases and started during the first week in the rest of the cases.

Constipation was much more common than diarrhoea in children. It was present at onset in 8 cases, during the 1st week in one case and during the 2nd week in 4 cases. Diarrhoea occurred in 3 cases during the 2nd week. In the rest of the cases the stools were normal.

Pain in the abdomen was a complaint in 5 cases. It was usually an early symptom. 4 cases had it at the onset and one case developed it on the 3rd day.

Headache was also an early symptom. 5 cases had it at onset and one case developed it on the 4th day.

Restlessness was present in 7 cases. It is usually a serious symptom and can occur anytime during the course of disease. It was seen at onset in 2 cases, during the 1st week in 3 cases and during the 2nd week in 2 cases. 4 cases having this symptom expired. It is particularly serious when seen at the onset of the disease. Out of the 4 cases who expired two had restlessness right from the onset.

Sleeplessness was present in 2 cases, in one at onset and in the other during the 2nd week. Both cases expired.

Constant crying was present in one case.

Delirium is another serious symptom. It can be seen as a part of 'typhoid state' or can occur without other symptoms of the state. It was seen in 8 cases at onset, in one case during the 1st week, in 2 cases during the 2nd week, in 3 cases during the 3rd week and in 2 cases during the 4th week. 2 cases with delirium expired.

Convulsions developed in 2 cases during the 2nd week. This may be due to toxic encephalitis.

Semiconsciousness is a symptom seen in very toxic cases. The child either remains semiconscious for a few days and then recovers or can lapse into unconsciousness and expire, as it happened in one case. It was seen in the 1st week in 4 cases and in the 2nd week in 5 cases.

Disorientation with disturbed sensorium was observed in 2 cases in the 2nd week. It is also a

serious symptom and suggestive of marked toxicity.

Retention of urine occurred in one case on the 9th day. This patient expired.

Dyspnoea was seen in 5 cases. This symptom was due to complicating pneumonia.

Rose spots were seen on the trunk in 3 cases during the 2nd week. In one case the patient had two successive crops at an interval of 4 days. The sudaminal rash was seen on the trunk in 4 cases, in one case during the 2nd week, in 2 cases during the 3rd week and in one case during the 1st week.

Typical typhoid tongue was seen in 13 cases and dry cracked lips were seen in 9 cases.

Signs of bronchitis were seen in 23 cases.

Meningism was detected in 2 cases—one case expired ; typical signs and symptom of 'typhoid state' were seen in 6 cases, in 5 cases during the 2nd week and in one case in the beginning of the 3rd week. 2 cases expired.

Heart sounds were distinctly muffled in 5 cases. One case developed soft systolic murmurs in all the areas. This muffling of heart sounds is due to associated myocarditis, which can be definitely detected by an E.C.G.

The abdomen was soft in feel in 15, distended and tympanitic in 7, tumid in 6 and sunken in 2 cases. There was generalised tenderness in 5 cases. Gurgling was felt in the right iliac fossa in 4 cases. This fact is due to associated typhlitis. The spleen was enlarged in 6 cases. It was enlarged one finger below the costal margin in two cases and two fingers in 4 cases. The spleen became palpable in all cases during the second week. The liver became palpable in 2 cases also during the 2nd week.

The skin became dry and was peeling off in small white scales in 4 cases. 50 per cent of the cases developed emaciation during the course of the disease. One patient had marked dehydration.

Laboratory Findings

Albuminuria was present in 50 per cent of cases.

Secondary anaemia was present in all cases.

White blood cells ranged between 3000 and 4000 per c.mm. in 2 cases, between 4000 and 5000 per c.mm. in 4, between 5000 and 6000 per c. mm. in 7, between 6000 and 7000 per c. mm. in 5, between 7000 and 8000 per c. mm. in 3, between 8000 and 9000 c. mm. in 3, between 9000 and 10,000 per c. mm. in 3 and above 11,000 per c. mm. in 3 cases.

There was relative preponderance of polymorphs in 5 cases and of mononuclear cells in 20 cases. In one case eosinophils were 26 per cent.

Complications

Glossitis—one case ; stomatitis—4 cases ; parotitis—one case ; suppurative otitis media—3 cases; nutritional oedema—4 cases ; aphasia—2 cases, one developed early in the 1st week and the other during the 3rd week ; bronchopneumonia—5 cases, one case had it at the onset (pneumo-typhoid), two cases developed it during the 1st week, one case during the 2nd week and one during the 3rd week ; 3 cases with pneumonia expired.

Diagnosis

The diagnosis was arrived at by positive Widal reaction. No cultural studies could be done due to inadequate laboratory facilities.

Mortality

It was observed that hyperpyrexia, restlessness, sleeplessness, delirium, disorientation, retention of urine, complicating pneumonia, typhoid state and meningism, either alone or in combination are danger signals.

8 cases (about 25 per cent) in this series expired. The details of the individual patients are as follows :

1. Restlessness and rowdiness started on the 6th day and persisted till expiry on the 24th day. On the 22nd day the patient developed aphasia.

2. The patient became delirious on the 4th day ; had diarrhoea and convulsions on the 8th day ; developed bronchopneumonia and unconsciousness on the 9th day and expired on the same day.

3. The patient developed restlessness and bronchopneumonia on the 10th day and expired on the 10th day with peripheral failure.

4. The patient developed diarrhoea and bronchopneumonia on the 14th day, became dehydrated and expired on the 15th day with marked toxaemia and peripheral failure.

5. The patient became drowsy and disoriented on the 10th day, developed 'typhoid state' and rose spot eruption on the 11th day and expired on the 12th day.

6. On admission the patient had hyperpyrexia, developed bronchopneumonia on the 24th day and delirium on the 27th day and expired on the 29th day.

7. On admission the patient had hyperpyrexia; developed restlessness, sleeplessness and rentention of urine on 9th day. The patient was markedly toxic and expired on the 13th day.

8. The patient was admitted with restlessness, sleeplessness, aphasia and meningism and expired on the 10th day.

Treatment

After admission into the hospital all patients were given a liberal diet consisting of soft boiled rice, mashed potatoes, dal, milk, butter-milk, fruit juices and plenty of glucose water. Multivitamin tablets were also given.

Effect of chloromycetin—In 12 cases chloromycetin was not given and 6 expired. From 18 cases treated with chloromycetin only 2 expired. The daily dose was 50 mg. per kg. body weight, in four divided doses. With chloromycetin the temperature became normal in 3-7 days and none developed a relapse.

PRACTITIONERS' SERIES

ANTHELMINTIC THERAPY

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Introduction

One of the commonest cosmopolitan diseases is helminthiasis. There are numerous varieties of helminths which infest the human body. Some prefer an intestinal habitat ; others invade tissues and organs. Fortunately many of these are rare and some have peculiar regional preferences.

So far as India is concerned, there are only a few varieties that are frequently encountered. But though few in number, they are of much practical importance because of their grave pathological effects.

Anthelmintics

It is a wrong practice to apply the term anthelmintics to drugs used against the intestinal helminths only. It is applicable to all drugs specifically used against any helminth, either intestinal or somatic. The older classification of anthelmintics as vermifuges and vermicidals has been abandoned.

The time-honoured drugs used either to expel or to kill the helminths were not always specific and had at the same time the great disadvantage of being highly toxic to the host. Administration of such drugs was always followed by periods of apprehension and had to be totally withheld in cases of dysfunction of the liver or kidney. Except a very few no drug was suitable for children.

With the introduction of newer chemotherapeutics a distinct advance has been made in the field of anthelmintics. They are now more specific and at the same time far less toxic. The less efficient older remedies like thymol and beta-naphthol have been replaced by piperazine salts. Toxic drugs like carbon tetrachloride have been discarded.

For practical therapeutic application, the anthelmintics are best classified according to their application against helminths living in the intestine or in the tissues of the host. In contrast to many effective intestinal anthelmintics, there is not a single effective somatic anthelmintic except piperazine which is again effective against microfilariae only. Table 1 shows the various types of helminths and the anthelmintic of choice.

Table 1—Showing Helminths and the Anthelminitic of Choice

Helminth	Disease	Anthelminitic of choice
I. INTESTINAL HELMINTHS		
A. duodenale *N. americanus*	Hookworm disease	Tetrachlorethylene*
A. lumbricoides	Ascariasis	Hexylresorcinol
E. vermicularis	Enterobiasis	Piperazine derivatives
T. saginata *T. solium*	Taeniasis	Mepacrine
S. sterocoralt	Strongyloidiasis	Gentian violet
T. trichiura	Trichuriasis	Hexylresorcinol
H. nana	Taeniasis	Hexylresorcinol
F. buski	Fasciolopsiasis	Tetrachlorethylene
G. hominis	Gastrodisciasis	Tetrachlorethylene
II. TISSUE HELMINTHS		
W. bancrofti *W. malayi*	Filiariasis	Piperazine derivatives**

* Drug of choice in absence of associated ascariasis.
** Effective against microfilariae only.

Drugs used against A. duodenale and N. americanus

DRUG OF CHOICE :

Tetrachlorethylene—While having the same effect as that of carbon tetrachloride, it is far less toxic. It has been used with insignificant side reactions even in patients with haemoglobin value as low as 6 g. per cent. No special preparation of the patient is necessary previous to the administration of the drug.

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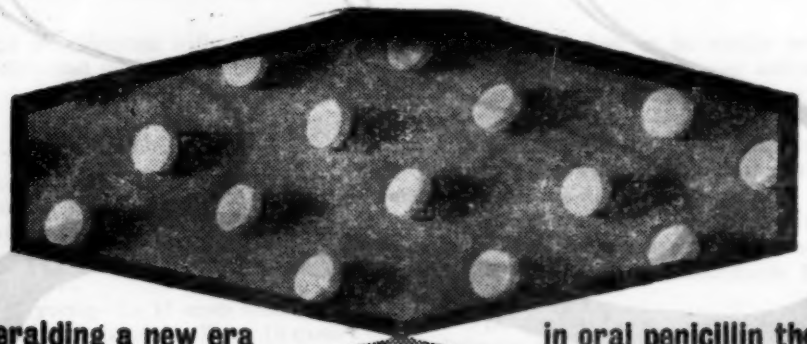

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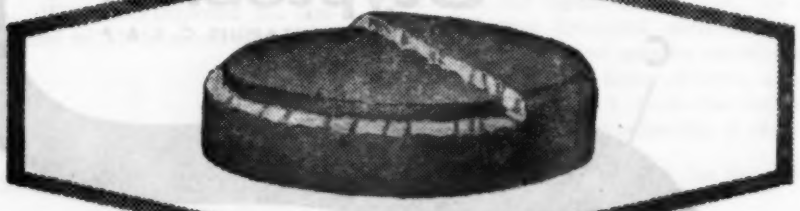

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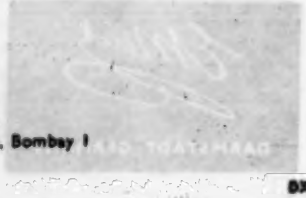

DUMEX

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Dosage—4 c.c. is administered orally either mixed with 1 oz. of skimmed milk or 2 oz. of saturated solution of magnesium sulphate (S. S. $MgSO_4$), in empty stomach early in the morning. In case it is administered with milk, it should be followed by a saline purgative (1 oz. S. S. $MgSO_4$) 2 hours after the drug has been given.

Treatment may be repeated if ova persist in the stools after the 6th day of the first treatment. The usual interval is 25 days.

OTHER DRUGS:

Hexylresorcinol (crystoids)—This is the drug of choice when there is associated infestation with ascaris (roundworm). Tetrachlorethylene while lethal to hookworms has a stimulating effect on the roundworms and thus complications like obstruction or perforation may precipitate due to migration of the roundworms. With hexylresorcinol this unwanted reaction is avoided. It is lethal, though not to the same extent as tetrachlorethylene, to both hookworms and roundworms.

The drug effect is enhanced with a semistarvation diet on the day previous to administration of the drug. The drug being highly irritant locally, it is best administered in hard gelatin capsules or in the form of enteric coated tablets. Patients, particularly children, must be warned against chewing the drug. It should be swallowed whole.

Dosage—It is administered orally in empty stomach. One g. in a single dose is recommended for adults. For children 0·1 g. for every year up to 6 years should be used. No food is to be allowed for the next four hours. A saline purgative (S. S. $MgSO_4$ 1 oz.) should be given 24 hours after.

A second course, if required, should be given 15 days after.

Tetrachlorethylene and oil of chenopodium—A combination of 3 c.c. of tetrachlorethylene and 1 c.c. of oil of chenopodium mixed with 2 oz. of S. S. $MgSO_4$ may also be administered in case of either a single infestation with hookworms or in associated ascariasis. The mixture is administered in empty stomach. The combination is more effective than any one singly.

Iron preparations—Along with anthelmintic therapy against hookworms it is essential that associated anaemia be treated. In the majority of cases administration of ferrous sulphate 1 g. (15 grains) a day in divided doses, after meals, is sufficient. Blood transfusion is required only in severe long-standing cases of anaemia.

DRUG USED AGAINST A. LUMBRICOIDES

DRUG OF CHOICE:

Hexylresorcinol—The dosage and methods of administration have been described under hookworm infestation.

OTHER DRUGS:

Piperazine derivatives—There are various salts of piperazine available either in the form of tablets or as a syrup. The latter is particularly suitable for children. With the introduction of piperazine preparations the necessity of dietary restriction, fasting or follow-up saline purgation, has been done away with. It has also the advantage of easy administration to the children in the form of syrup and there are very little side reactions.

Dosage of piperazine citrate syrup (antepar)—For infants and children below 60 lb., 6 drams (500 mg. of piperazine per fl. dram) in a single dose in the evening. In others, 8 fl. drams in a single dose should be given.

Dosage of diethylcarbamazine citrate (banocide and hetrazan syrup and tablets, dicarbamin tablets). This preparation is available in the form of syrup (120 mg. of piperazine per fl. dram = 1 teaspoonful) and as tablets (50 mg. each). For ascariasis the dose is calculated as 6 mg./kg. The total dose is given in three equally divided doses after meals for 7 days.

Dosage of piperazine adipate (phenazine)—It is available in liquid form. Each dram contains 300 mg. of piperazine. The recommended dose is 1 fl. dram per year up to 6 years and 2 fl. drams per year in others, three times a day for 5 days.

Dosage of piperazine tartarate (veroxyl)—It is available in elixir form and contains 500 mg. of piperazine per fl. dr. (1 teaspoonful). The calculation of dosage is same as that of adipate.

Santonin—A classical remedy. It is still being used in spite of being the most expensive and somewhat toxic drug. Its use should be dispensed with.

Stools should be examined six weeks after the treatment and if ova persist a second course should be given on the seventh week.

DRUGS USED AGAINST E. VERMICULARIS

DRUG OF CHOICE:

Piperazine citrate—Infestation by *E. vermicularis* (threadworm) before the days of piperazine was one of the hardest infections in children to treat. Since the introduction of piperazine the

days of enemata are over. In spite of the effective treatment with piperazine, prevention of reinfection still forms an essential part in the eradication of the disease.

Dosage of piperazine citrate syrup—Each fluid dram (4 c.c. = 1 teaspoonful) contains 500 mg. of the drug. For children weighing between 30-60 lb. the dose is 3 fl. drams and in others 4 fl. drams. The drug is given in a single dose, before breakfast for 7 days.

The treatment may be repeated after an interval of 8-10 days.

Drugs used against S. Stercoralis

DRUG OF CHOICE :

Gentian violet—The drug is administered in 1½ hour enteric coated tablets 60 mg. (1 gr.) three times a day for 15 days. No other drug is effective.

Drugs used against T. Saginata and T. Solium

DRUG OF CHOICE :

Mepacrine—A previous saline purgative and a semi-starvation diet enhance the effect of the drug. The drug is administered orally in empty stomach as tablets or in solution by duodenal intubation. The latter method is preferred when infestation by *T. solium* is suspected.

Dosage—Two tablets (100 mg. each) are given every 15 minutes till 800 mg. is administered. The heavy dose of mepacrine induces extreme nausea. This may be checked by administration of 60 mg. (1 gr.) of phenobarbitone half an hour before and 300 mg. (5 gr.) of sodium bicarbonate along with each dose of mepacrine. Two hours after the last dose a saline purgative (1 oz. S. S. $MgSO_4$) is given.

OTHER DRUGS :

Filix mas—An old safe and effective remedy which still occupies a place in the treatment of intestinal taeniasis, particularly against *T. solium*. It is best administered after a course of mepacrine. Its only drawbacks are its local irritant effect which causes vomiting and the necessity of a fairly large dose for effectiveness. Before administration, a fat-free semi-starvation diet for two days is necessary. The bowels are cleaned with a saline purgative (1 oz. S. S. $MgSO_4$) in the previous evening. The drug is administered in empty stomach.

Dosage of liquid extract of filix mas—2 fl. drams (90 m.) of the drug is administered emulsified in milk or mucilage of acacia in two equally divided doses. Two hours after the second dose a saline purgative is given. Castor oil should never be used as a follow-up purgative. Identification of the head of the worm in the stools passed is essential to assume a cure.

Treatment if necessary should be repeated three months after. In some cases 3 to 4 such cyclic treatments may be necessary.

Drugs used against F. Buski and G. Hominis

DRUG OF CHOICE :

Tetrachlorethylene.

OTHER DRUG :

Hexylresorcinol.

The drugs are given in the same way as for the hookworms.

Drugs used against W. Bancrofti and W. Malayi

DRUG OF CHOICE :

Diethyl carbamazine citrate—It must be remembered that the drug is effective only against the microfilariae. The adult filarial worms are not affected.

Dosage—It is administered in the form of tablets (50 mg. each). The dose is calculated as 6 mg./kg. a day. The total dose is administered in three equally divided doses after meals for 3-4 weeks.

OTHER DRUGS :

In acute cases of filarial lymphangitis 1 g. of sulphadiazine 6-hourly or injections of penicillin 500,000 units twice daily should be administered along with piperazine. In some cases when with administration of piperazine allergic manifestations appear antihistaminics should also be given along with each dose of the drug.

There are no effective chemotherapeutic agents against *D. medinensis* (dracontiasis), *T. spiralis* (trichinosis) and tissue phases of *T. solium* and *T. saginata* (cysticercosis).

Essential points in connection with the drugs of choice against each disease are summarised in Table 2.

TABLE 2—SHOWING ESSENTIAL POINTS IN CONNECTION WITH ADMINISTRATION OF THE DRUG AGAINST EACH DISEASE

Disease	Drug of choice	Preliminary preparation of the patient	Dosage	After-treatment	When to repeat subsequent course
Hookworm disease	Tetrachlorethylene	Not required	One single dose of 4 c.c. mixed with milk or in capsules	S.S. $MgSO_4$ 2 hours after	21 days after
Ascariasis	Hexylresorcinol	Essential	1 g. in single dose	S.S. $MgSO_4$ 24 hours after	6 weeks after
Enterobiasis	Piperazine citrate	Not required	3-4 fl. drams in empty stomach for 7 days	Not necessary	8-10 days after
Strongyloidiasis	Gentian violet	Not required	6 mg. t.d.s. for 15 days	Not necessary	—
Taeniasis	Mepacrine	Essential	800 mg. single administration (200 mg. every 15 minutes)	S.S. $MgSO_4$ 2 hours after	21 days after
Fasciolopsiasis	Tetrachlorethylene	Not required	Same as for hookworm		—
Gastrodisciasis	Tetrachlorethylene	Not required	Same as for hookworm		—
Filariasis	Diethyl carbamazine sulphate	Not required	6 mg./kg. daily for 3 weeks after food	—	—

PUBLIC HEALTH

AN EXPERIMENT IN INTERRUPTION OF MAN-TO-MAN FAECAL AND HELMINTHIC CIRCULATION IN RURAL COMMUNITY

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INTRODUCTION

Perhaps one single factor responsible for the physical, mental and social well-being of a community in advanced countries is its environmental sanitation. Sanitary disposal of the human excreta, the safe water supply and ingrained beneficial practices of food hygiene have wiped out infantile diarrhoea from the list of causes of infantile mortality and reduced the incidence of typhoid fever, dysenteries or other gastrointestinal diseases or disorders to a remarkably low level in developed countries. But in our rural areas and towns where there was no proper water supply or sewage system, the faecal transmission from anus to mouth and helminthic transmission from man to man are being continuously maintained through uncovered excreta, by flies, unsafe water-supply, dust, defective slaughter houses, unsatisfactory food hygiene in homes and community kitchens, and by vendors or sweetmeatsellers.

A small experiment was conducted in the rural areas of the district Bahraich of U.P. to break this man-to-man faecal and helminthic circulation which is responsible for such heavy morbidities and mortalities in the community. This experiment was limited to the safe disposal of the human excreta.

Before describing the experiment, a brief review of the cheap methods available for the disposal of human excreta in the rural areas will not be out of place.

The following are the types of rural latrines available :

SERVICE TYPE :

It consists of a bucket of 3 gallons capacity placed in a chamber ½″ bigger in all dimensions. The bucket is removed through a trap door.

TRENCH PATTERN LATRINES :

Ordinary type—It consists of 48″ × 10″ × 80″ with moveable screens. The earth removed is banked behind leaving a strip of 6″.

Wardha type—It has a seat over a shallow trench. This seat is moved every day along a line.

Agricultural type (moving latrine)—It has a wooden frame measuring 3′ × 2½′ × 5½′ placed

on wheels of 1¼′ diameter. A triangular metal piece is fixed at the bottom of the frame to drop earth as the latrine is pulled by a rope. A trench 25′ × 6″ × 6″ is constructed in one field.

Deep trench type—Planks are placed over a deep trench 9′ × 3½′ × 6′. When the trench is filled 2½′ from the ground level, it is filled up and closed ; otherwise flies might breed.

BORE HOLE TYPE :

It comprises a circular pit of 16″ diameter bored to a depth of 20-25′ by special boring apparatus. It is covered by a cement-concrete plate 3′ × 2½′ × 2″ with 1¼″ slope from the sides to the centre.

Single seated water seal bore hole latrine—It has a water seal in the plate and excreta is discharged to the bore hole through a 4″ diameter cement pipe. A 3″ vent pipe is also fixed near the outlet of water seal plate.

DUG WELL TYPE :

It is 2½′ diameter dug well. This is covered by a squatting plate with or without water seal.

Improved dug well—In this a seat is placed a little away from the dug well, excretal matter drains into the well through a water seal.

Pit type—It is in between deep trench and dug well. It consists of a squatting plate placed over a pit 3′ × 4′ × 8′.

LAL TYPE :

It consists of a squatting pan which drains faecal matter through a horn-shaped pipe 2½′ long into a trench 10′ × 2′ × 3′ at centre or 3½′ at ends. The trench is provided with a vent pipe.

MODIFIED FAMILY TYPE (KANTHI LATRINE) :

It consists of a trench 4′-8″ × 2′ × 5′ covered over by a squatting plate 3′ × 3′ × 2″.

JUNIOR SEPTIC TANK :

It consists of a large earthenware *ghara* (water-pot) placed underground. A squatting plate of concrete leads with first elbow pipe which opens 2″-3″ below the level of the septic scum. A second elbow pipe drains the liquid from about the centre of the *ghara* into a bore hole.

The Experiments

The prescribing of any of the above-mentioned methods for prevention of soil pollution is easy but the actual practice of any method by members of a rural community involves many socio-economic medicosocial and cultural factors.

Intensive sanitation drives were made in selected NES (National Extension Service) villages. Paramedical workers (epidemic assistants) were also posted for health education at villagers' convenience. The creation of a demand for latrines was considered an essential preliminary before putting up the latrines.

The 'Lal type' latrines were mostly fitted up because of the following reasons :

The 'service type' was not considered sanitary. The 'trench types' were not good family latrines. The 'bore hole' had bottlenecks in easy transport of Augur and heavy boring equipment. The sight of the faecal matter in a 'dug well' was considered abhorring. The 'water seal' plates needed at least one gallon of water for clearance. The 'junior septic tank' had a short life.

The following are the difficulties encountered in the maintenance of the 60 'Lal type' seats fitted up for demonstration :

The main difficulty was to secure the covering material for the trench 10′ × 2′. In spite of thick branches of trees being used as base to hold a turfed mound of earth, many trenches collapsed especially in rainy months. At places the wooden planks covered with coal-tar on the undersurface was used. Some of these were also eaten by termites. Moreover good planks being costly, could not be provided by villagers.

Both the pans and the pipes were not nicely glazed and small bits of faecal matter often stuck there.

6″ diameter of the hole in the pan leading into the pipe often meant balancing over the pan to direct faecal matter into the pipe. The back edge of the pan was often soiled in spite of use even by well rehearsed people.

2′ front to back length and its imperceptible gradient was not enough to avoid splashing of urine.

Straw used to provide privacy walls often collapsed and people did not put them again.

In spite of these obstacles more than 40 remained in use on family basis and had no fly breeding or smell nuisance for about a year.

To overcome especially the obstacles of the coverings of the trench purdah walls, etc., planning department's aid in villages on 1/3-2/3 basis for public works was utilised. As such 2, 3 or 4 seated 'Lal type' public latrines were made. Each seat was placed on a brick-work base with the pipe leading to the trench. In cases of 4 seats, trench dimensions were enlarged to 20′ × 2′ × 3′. Good

wooden planks painted with coal-tar on the under-surface or reinforced concrete slabs were used for covering. Of course earthen mound turfing was given over the trench. A one-brick purdah wall 4′ high separated the seats from each other and from the trench. Another common one-brick purdah 4′ to 5′ was given in front of all seats leaving a passage 1′ to 2′ broad. 1/2 to 1/3 aid avail-

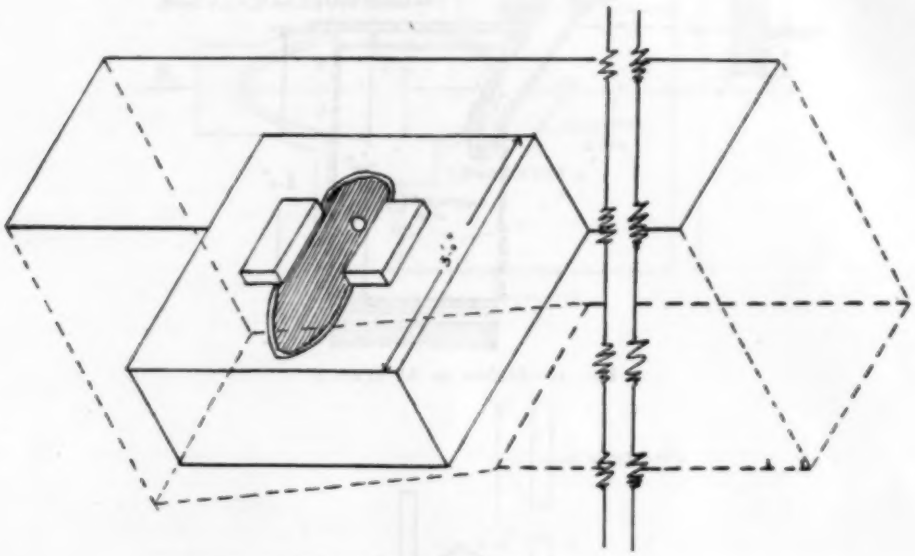

FIG. 1A—ISOMETRIC VIEW (TYPE I)

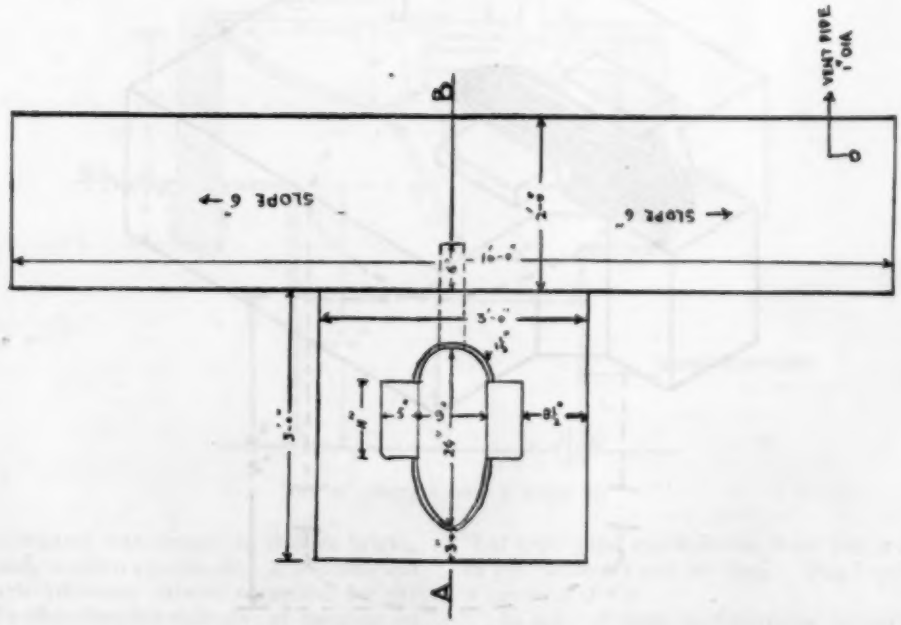

FIG. 1B—PLAN (TYPE I)

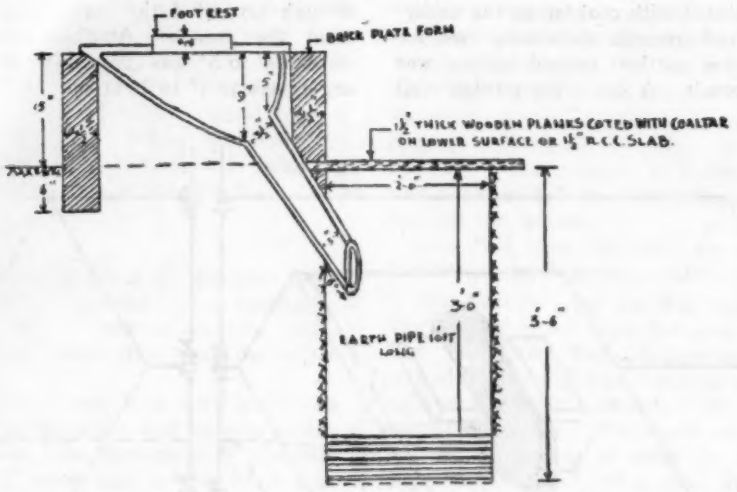
FOOT REST
BRICK PLATE FORM
1½" THICK WOODEN PLANKS COTED WITH COALTAR ON LOWER SURFACE OR 1½" R.C.C. SLAB.
3'-0"
5'-6"
EARTH PIPE 10FT LONG

FIG. 1C—SECTION ON AB (TYPE I)

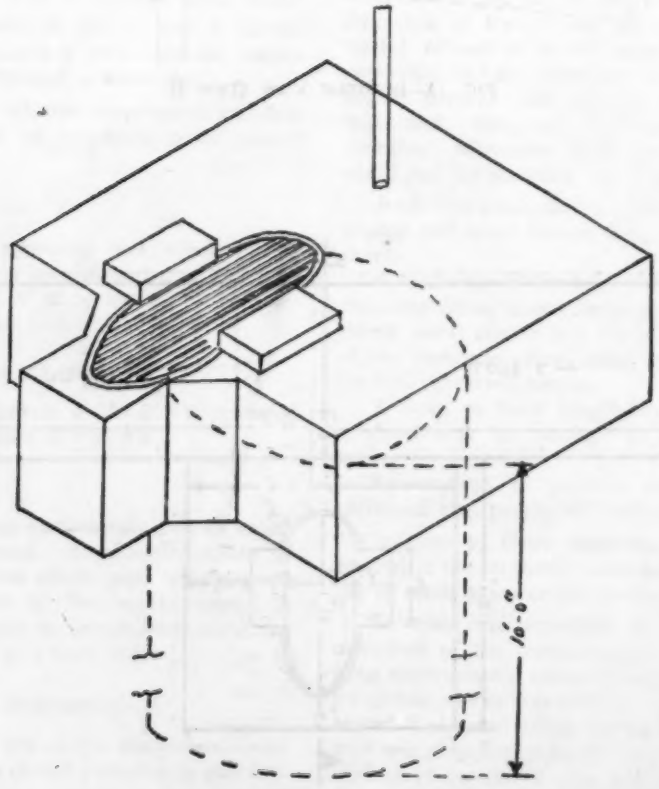

FIG. 2A—ISOMETRIC VIEW (TYPE II)

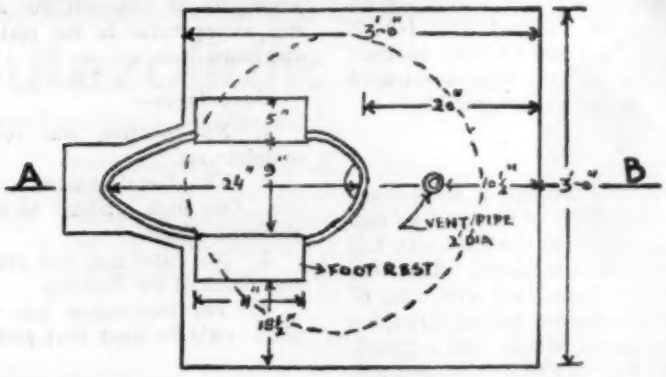

FIG. 2B—PLAN (TYPE II)

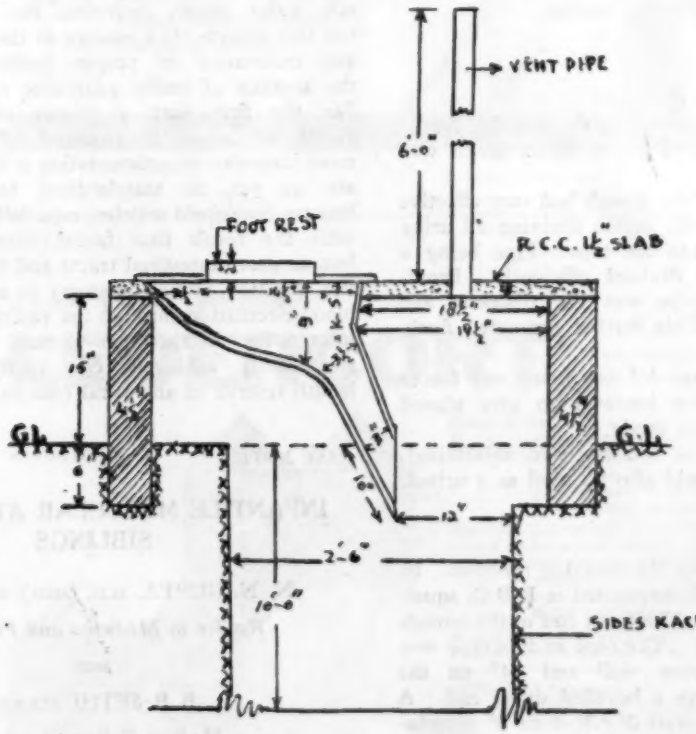

FIG. 2C—SECTION ON AB (TYPE II)

able from planning was enough to provide bricks, cement, sand, wooden planks etc. 2/3 public aid was through voluntary labour organised by the public. To overcome the difficulty of covering on family basis where planning aid is not available, 'Lal type' pipe was made to drain into a dug well of 2½′ diameter and 10′ deep. This required only a covering 3′ × 3′.

In spite of these modifications, it was felt that the problem was not solved to the extent of making

latrines a very popular feature for rural sanitation. However, persistent experimentation was done and 5 types of seats were made. Type I (Fig. 1-A, B and C) type II (Fig. 2-A, B and C) were finalised on kutcha moulds. Local artisans were encouraged to cast them in single pieces on clay moulds.

TYPE I :

It was made of R.C.C. through 2′ from front to back and 9″ from the middle of the one foot rest to that of the other. The span for faeces to fall behind the foot rests was still bigger. This was fitted up on a brick-work base 3′ × 3′ × 15″ with 6″ foundation. The trough drained behind through a straight pipe 2½′ in length either into a trench 10′ × 2′ × 3′ to 3½′ or dug well of 2½′ diameter and 10′ deep. Usual covering, mound, turfing were given on the trench or dug well and vent pipe 6′ long of 2″ diameter was provided. The trough and the upper 1″ of the pipe were given nice glaze by rubbing white cement before curing.

Advantages—

1. It was made in one piece.
2. It gave a very comfortable span for faeces to fall. No conscious efforts to direct faeces was required.
3. All side walls of the trough had very effective slope to create automatic action draining all urine and ablution water into the pipe. Pipe being a straight inclined one drained efficiently. Proximal opening of the pipe was 3½″ diameter and distal 3″ diameter. This further promoted flushing.
4. White sand glaze did not permit any faeces to stick. Its efficiency however to give glazed surface requires further study.
5. Chances of urine splashes were minimised.
6. The trough could also be used as a urinal.

TYPE II :

Type I did not solve the covering problem. In type II a trough was incorporated in R.B.C. squatting plate 3′ × 3′ × 9″. The front end of the trough projected off the plate. The pipe in this type was 18″ long on the lower wall and 14″ on the upper wall. This gave a bevelled distal end. A base of 1-brick thick wall 3″ × 3″ with 6″ foundation was given over a dug well 2½′ diameter and 10′ deep. The seat was fitted over that. The distal end of the pipe opened at least 12″ away from the distal wall of the dug well. This avoided any erosion of the well owing to flushing. Further the levelled end spent all the force of the flush by throwing the drained material over a wide area. A vent pipe 6′ long was given in the centre of the plate. To fit that without any support, a collar was incorporated in the plate (not shown in the diagrams).

Advantages—

1. No covering was required as it was a complete set.
2. The faecal matter was not visible to the eye. One inch gradient to the back wall further obscured vision.
3. No water seal was given. No extra water was required for flushing.
4. The mechanism was very simple and the plate could be used over and over again.

Conclusion

A planned scheme is required for prevention of soil pollution on the same lines as ambitious schemes for malaria eradication, filariasis control, safe water supply provision etc. This problem has two aspects (1) a change in the national habits and cultivation of proper health concepts, (2) the making of really adaptable sanitary fittings. For the first part, a proper methodology for health education is required. For the second most intensive experimentation is required as there are, as yet, no standardised fittings to really become household articles, especially in rural areas, with the result that faecal circulation through human gastrointestinal tracts and helminth circulation through human anatomy is as continuous as blood circulation through the vascular tracts. This interruption in the man-to-man transmission, if successfully achieved, can vastly increase the health reserve of any rural community.

CASE NOTE

INFANTILE MUSCULAR ATROPHY IN SIBLINGS

N. N. GUPTA, M.D. (MED.), M.D. (PATH.)
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AND

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The terms amyotonia congenita and infantile muscular atrophy (Werdnig-Hoffmann disease) seem to be confused. Most authors consider them identical diseases. Turner (1949) writes that amyotonia congenita is a clinical syndrome which can result either from a primary muscle disorder (an infantile myopathy which may not

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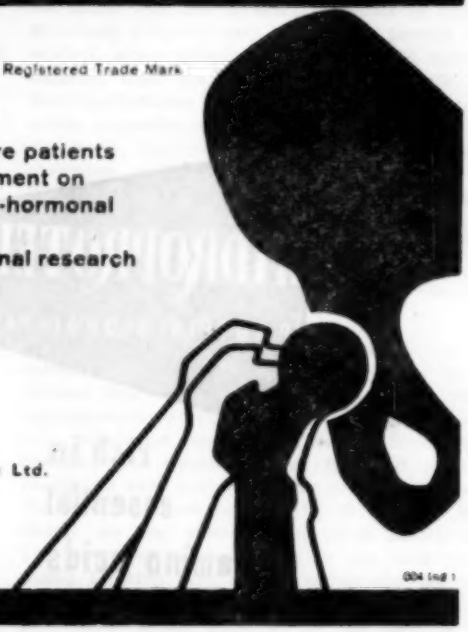

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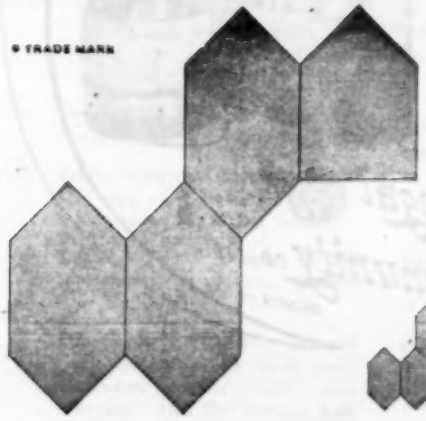

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TABLE 1—SHOWING DETAILS OF THE CASES

Sl. No.	Sibling	Age in years	Clinical findings
1	Sister	21	Has flatfoot only.
2	Brother	—	Had amyotonia noticed at the age of 1 year and died of wasted limbs and paralysis at the age of 10.
3	Brother	18	Markedly thin all over and weak in physical performance.
4	Sister	17	Has flatfoot, thin all over but normal otherwise.
5	Brother	15	Looks 12 years. Muscles very weak and thin all over; thinness first noticed by mother at the age of 5 years. Reflexes and sensations normal, muscle power weak, and the disease progressive.
6	Sister	14	Looks 10 years. Disease noticed at 1 year. Could not support the head. Started walking at 2½ years with frequent falls. On hospitalisation she had complete atonia, all deep reflexes were lost, plantar response could not be elicited. She could not walk without support; universal wasting of muscles of the body. No fibrillation noticed. There was no sensory or sphincteric disturbance. After about 6 months of hospitalisation she died of rapidly increasing paralysis.
7	Sister	—	Died when only 9 days old; cause of death unknown.
8	Brother	10	Looks 6 years. Disease noticed at age of 4 years. Clinically similar to No. 6 but milder.
9	Sister	8	Looks 4 years. Disease noticed at the age of 4 years. Similar to No. 6.
10	Brother(?)	5	Has lordosis, flatfoot, external genitals seem to have rudimentary penis and also vagina. Has the general look of a boy.
11	Brother	4	In perfect health at present.

be progressive), or from an affection of the spinal cord of the Werdnig-Hoffmann type. Sandifer (1955) stated that the infant with the universal hypotonia of Oppenheim's amyotonia congenita may in adult life present only well-marked, non-progressive localised muscle wasting. He suggests that this syndrome could include cases of Werdnig-Hoffmann disease, congenital laxity of ligaments, congenital universal muscular hypotonia, myasthenia gravis, congenital atonic diplegia, mental deficiency associated with hypotonia, infantile hypercalcaemia, infantile acidosis and polyneuritis, etc. Brandt (1950) drew similar conclusions after study of a large number of cases of amyotonia. Greenfield and Stern (1927) have shown spinal cord lesions present not only in Werdnig-Hoffmann disease but also in other types of amyotonia.

The object of reporting this family is not only to record a large number of diseased siblings but also to indicate that infantile atrophies should be considered heterogeneous and may get arrested at any stage or lead to a progressive paralysis and death. Minor congenital disorders like infantilism, flat foot and pseudohermaphroditism were noticed in some members of the family. The ages of onset and deaths of children from the disease are also different from those usually believed. The symptoms of the disease in the members of the family reported here started within the age range of 1—5 years. Two children in the same family died of progressive spinal paralysis at the age of 10 and 14 years.

CASE REPORTS

Age, sex and details of examination of the siblings are given in Table 1 which shows that in 11 siblings, 5 were definitely affected (Nos. 2, 5, 6, 8 and 9) with muscular atrophy starting at different ages, 3 (Nos. 3, 4 and 10) seemed to be victims of milder grades of the same disease while one died when only 9 days old of unknown cause.

The details of the cases seem to indicate that infantile muscular atrophy does not follow any classical description.

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JOURNAL OF THE
INDIAN MEDICAL ASSOCIATION

CALCUTTA, NOVEMBER 16, 1958

EPIDEMIC ENCEPHALITIS

Encephalitis generally connotes inflammation of the brain substance by microbes, viruses or toxins. Epidemics of encephalitis have often visited mankind since the 17th century, in different parts of the world. The recent visitations since the second decade of the present century have been varied, frequent and disastrous. Some are reminiscent of encephalitis lethargica. Places like Madras, Jamshedpur, Delhi, Agra, Lucknow and Nagpur recently have not been free from them.

Pathogenicity of various causative agents varies from time to time and new and unidentified viruses may be causative factors. Medical sciences are continuously trying to probe into these mysteries by observations and scientific research.

Neurotropic viruses are known to be causative of some cases of encephalitis, presumably to be causative for others or otherwise. Viruses may be transmitted by mosquitoes, ticks or by infected food and the mode of transmission may be direct or indirect, the channels of infection being ingestion, inhalation or injection. Ticks are known to be responsible for epidemics of encephalitis in Great Britain, Central Europe, Russia and Siberia and mosquitoes in U.S.A., Africa, Asia and Australia. The viruses have for some time been found enzootic in wild birds and infected domesticated fowl or in mites, lice and mosquitoes.

Encephalitis lethargica, equine encephalitis, inclusion body encephalitis, swineherd's encephalitis, Japanese B encephalitis, St. Louis encephalitis, West Nile viruses encephalitis, Australian X fever, viral encephalomyocarditis and Russian spring-summer encephalitis and louping ill encephalitis due to the virus of herpes simplex, herpes zoster, mumps, measles, chickenpox, smallpox, benign lymphocytic choriomeningitis, coxsackie group and acute haemorrhagic, leuco-encephalitis, benign myalgic encephalitis and polio-encephalitis are known. Recent epidemics of Japanese B encephalitis in Madras and Kyasanur forest disease in Mysore State have helped to identify viruses of the disease in question.

Encephalitis is known to occur sporadically or in epidemic form. Cases of undetermined and varied origins, have been frequently reported. These seem to have the characteristic of a viral origin but, so far the virus has not been isolated and identified. Allergic brain tissue reaction should not be lost sight of in considering these epidemics as demyelination has been known to occur due to brain tissue allergy. Leptospirosis may also produce the same clinical features with or without jaundice.

The disease presents varied epidemiological features being more common in India in late summer months, sex incidence being almost equal. In the early stages personal contact with a case may be responsible. But, more than one case is not found in a family, and the possibility of symptomless healthy carriers cannot be mooted out. The maximum infectivity seems to be in the early stages in the first two or three weeks. The features of the disease have clinical resemblance to the causal agent being a virus. It may start in closed communities and then spread to infants, children and adults. The exact mode of transmission cannot always be known. Fre-

quency of incidence, clinical types, epidemiological features and mortality vary in each epidemic but it seems that the recent Nagpur incidence had a tendency to limit itself and had an incubation period of 3 to 12 days.

It may have an abrupt onset and an extreme variability of symptoms but there may be prodromata such as lassitude, malaise, uneasiness, irritability, confusion, asthenia, somnolence, sore throat, body aches and pains, headache, nausea, vomiting, chilly sensations or even rigors. Involuntary movements, vertigo, fever and the co-operative state and state of consciousness may vary from mental cloudiness to dullness, stupor or coma. There may be weakness of the limbs, flaccidity or rigidity, paraesthesia and difficulty in initiating micturition or incontinence and even meningeal symptoms and hyperpyrexia. The cranial nerves may be affected producing ocular palsies, squint, trigeminal affection, trismus or dysphagia. Bulbar affection is not unknown.

There can be dubious rigidity of the neck or even meningeal symptoms and there may be muscle spasm, tenderness or myalgia, even rigors. The heart and the higher cerebral centres may be affected, there may be associated gastrointestinal and respiratory upsets and the spleen may be tender. Relapses are not unknown. The pulse and respiration rates may be elevated. There may be abortive types which may present various groups of clinical syndromes.

The cerebrospinal fluid may be under tension, clear and may be normal or in some cases may contain increased proteins, sugar and cells. Decrease of sugar has been recorded in a few cases but the possibility of coincident hypoglycaemia is not excluded. Blood may show leucocytosis with relative increase in polymorphonuclear count. Changes in complement fixation titres, neutralisation test and haemagglutinin test for chick red cells would be of value in association with tissue cultures, if available. Post mortem reveals usual changes of viral encephalitis.

As no means of controlling or curing the disease are known, our responsibility becomes all the greater. It is very necessary that a correct clinical diagnosis be made ; otherwise, there is a possibility of wrong cases being reported that might lead to unnecessary panic. Cleanliness and maintenance of general hygienic measures are important. It is very necessary to avoid overexertion and have good sleep in order to have optimum resistance. Health education and co-operation of all health agencies and medical and nursing organisations are essential. As there is no known causative agent, general sanitary measures such as drainage of marshlands, use of mosquito- and tick repellants, control of the houseflies are useful. There is no known vaccine available so far.

Notification, isolation, disinfection seem to be the mainstays of treatment. Quarantine, internal or external, may be of preventive value.

Maintenance of nutrition, fluid balance, prevention or control of hyperpyrexia, support to the heart, peripheral circulation and higher centres and efficient supportive treatment coupled with enthusiastic nursing are the ones most useful in management. Antibiotics and steroids do not seem to be of material value.

Encephalitis, its aetiology, epidemiological features, diagnosis and prevention all present problems to-day to be solved some day by modern medicine through organised medical research.

CURRENT MEDICAL LITERATURE

Pulmonary Embolism

FLEISCHNER, F. C. (*Canad. M. A. J.*, **78**: 653, 1958) from the Department of Radiology, Baeth Israel Hospital and Harvard Medical School, Boston, Massachusetts, gives in the following lines the summary of the Lonist Gross Memorial Address presented before the Montreal Clinical Society on October 17, 1957:

Pulmonary embolism is common, in medical cases with and without cardiovascular disease, after operations and injuries, during pregnancy and the puerperium.

As long as we have not learned how to prevent pulmonary embolism, the early diagnosis is important in order to protect the patient against further embolic episodes.

The complete classical clinical symptomatology is the exception. Pulmonary embolism may simulate any kind of cardiac, pulmonary, pleural, neurologic, or acute abdominal disease.

Among the signs and symptoms, chest pain and dyspnoea, singly or combined, are the most common early signals. Haemoptysis is comparatively rare.

If pulmonary infarction is diagnosed by clinical means or roentgenologically, this signifies that there has been an episode of embolism.

The "triangular shadow" of the infarct is a fiction. Consolidations of any shape may be caused by infarcts. The classical appearance is a consolidation of cushion or hemispherical shape, with its longest extension arranged along a pleural surface. This may be the lateral, diaphragmatic, mediastinal or any interlobar pleura. The exact relation to the pleura must be elicited, in many instances, by proper positioning under fluoroscopy. Most infarcts are located in the lower portions of the lung, fewer in the mid-lung field, and only rarely do they occur in the upper lung field.

Incomplete infarction, i.e., blood extravasation without necrosis and eventual scar formation, is apparently more common than the classical infarct.

Many instances of embolism, probably the majority, occur without infarct formation.

Roentgenologically, in addition to the classical infarct, we look for signs of impaired ventilation, such as high position of the diaphragm, diminished ventilatory diaphragmatic excursion and basal atelectasis, often in the form of plate atelectasis. The diminished distance between the right dome of the diaphragm and the horizontal fissure is a good yardstick for inhibited ventilation. This ventilatory inhibition may occur on one side only or bilaterally.

Pleural effusion may be the first objective clinical and roentgenologic manifestation of pulmonary embolism. The effusion may hide an infarct which becomes visible with resorption, or after thoracocentesis with evacuation of the fluid. Sometimes the infarct is minute and not detectable roentgenologically.

The syndromes of acute and chronic cor pulmonale or pulmonary hypertension are often revealed by: (a) dilated hilar arteries forming a plump tumour-like hilar shadow; (b) dilatation of the pulmonary artery trunk, most common in chronic embolism; (c) increased translucency due to oligaemia of the lung field—lobar or unilateral in acute embolism, unilateral or bilateral, more often in chronic embolism; (d) dilatation of the right ventricle in chronic cor pulmonale, best recognised by the increased area of contact between heart and anterior chest well in the lateral roentgenogram; (e) right inflow stasis as manifested by dilatation of the azygos vein and superior vena cava.

Tricuspid Stenosis

KILLIP, T. AND LUKAR, D. S. (*Am. J. Med.*, **25**: 836, 1958) from the Department of Medicine and the Cardio-Pulmonary Laboratory of the New York Hospital—Cornell Medical Centre, New York, give in the following lines the summary of their observations on the clinical features of tricuspid stenosis in 12 cases:

Tricuspid stenosis was identified clinically and confirmed by cardiac catheterisation in twelve patients. In one patient the lesion was isolated. It was associated with mitral disease in four, and with both aortic and mitral lesions in seven. Two patients came to autopsy and two underwent tricuspid valvuloplasty.

The most striking clinical feature was a characteristic diastolic murmur with a thrill in the third, fourth and fifth intercostal spaces to the left of the sternum. The increase in intensity of the murmur during inspiration and the decrease during expiration aided greatly in identifying the murmur and differentiating it from that of mitral stenosis. The intensity of the murmur varied with respiration in the same manner as the transvalvular diastolic pressure gradient. An opening snap of the tricuspid valve was heard in only three cases. Dyspnoea, fatigue and oedema were the most common symptoms but the resulting disability was quite variable. Recurrent ascites was present in three patients.

The right atrium was enlarged in every patient but was massive in only three. The largest right atria, the most severe right atrial hypertension and the greatest tendency to develop oedema were associated with coexisting tricuspid insufficiency, multivalvular disease and atrial fibrillation. Tall P waves, often taller than QRS in V_1, and low QRS complexes with an rsr pattern in lead V_1 were common features of the electrocardiogram.

In one patient the area of the tricuspid orifice estimated from data obtained at cardiac catheterisation and that determined by planimetery of a postmortem photograph of the valve were identical. In two patients in whom autopsy was performed the tricuspid valve was less stenotic and deformed than the mitral valve.

The pulmonary vascular pressures and resistance in patients with mitral and tricuspid stenosis were lower than in patients with a similar degree of mitral stenosis alone. Pulmonary venous hypertension, however, was not entirely prevented and most of the patients had pulmonary congestive symptoms of mitral stenosis, including orthopnoea. The failure of one patient to improve following mitral valvuloplasty was attributed to the tricuspid stenosis.

Serum Cholesterol Studies in Finland

KEYS, A., KAROONEN, M. J. AND FIDANZA, F. (*Lancet*, **2**: 175, 1958) from the laboratory of Physiological Hygiene, University of Minnesota, Minneapolis, Minnesota and the Institute of Occupational Health, Helsinki, Finland, observe:

Statistics indicate unusually high mortality-rates and morbidity-rates in Finland as a whole and in East Finland in particular, ascribed to coronary disease.

Total cholesterol and that in the α (alpha) and β (beta) lipoprotein fractions were measured in 869 clinically healthy men aged 20-59 in the city of Helsinki and in two rural regions of Finland.

The total cholesterol levels tended to be higher than those observed in populations elsewhere, and this excess was accounted for by β-lipoprotein cholesterol.

Farmers' views resembled the men in the rural areas as regards total cholesterol but had higher levels of α-lipoprotein cholesterol.

In the age range 40-49 the men in occupations demanding heavy physical work had lower cholesterol levels than had the men in lighter work, but at other ages the cholesterol level appeared to be unrelated to habitual physical activity.

Smokers tended to have higher cholesterol levels and lower blood-pressures than had non-smokers.

At all ages and activity levels the men in East Finland tended to have higher levels of total cholesterol in their serum than had the men in West Finland, and this difference was entirely accounted for by β-lipoprotein cholesterol. However, when the men in Helsinki were classified according to region of birth, there were no significant differences, suggesting that the regional differences are not due to hereditary influences (*Authors' Summary*).

Diet and Cardiovascular Disease in Finland

ROINE, P., PEKKARINEN, M., KARVONEN, M. J. AND KIHLBERG, J. (*Lancet*, **2**: 173, 1958) from the Department of Nutritional Chemistry, University of Helsinki and the Institute of Occupational Health, Helsinki, Finland, from the analysis of the dietary surveys in the two selected areas of the country undertaken to find out if the higher incidence of cardiovascular in East compared with West Finland is due to the dietary differences observe:

The food consumption during seven days of eighty-four families in summer and forty families in winter was determined by accurate weighing, and the daily calories and nutrient intakes per caput per diem were calculated.

The average amount of fat consumed each day was 98·9 g.—105·0 g. per caput, being very similar in West and East and in summer and winter. The mean percentage of energy derived from fats was within the limits of 34·4 per cent and 35·0 per cent. The intake of saturated fatty acids was a little larger in the East, and that of linoleic acid and other poly-enes in the West, but these differences were not statistically significant. In both cases the intake of saturated acids compared with that of poly-enes was rather large. The ratio of saturated acids to poly-enes was higher in the East than in the West.

Considerable differences were found in the amounts of iodine, ascorbic acid, and vitamin B, the intakes of which were signifiantly larger in the West. The low iodine content of the diet, causing hypothyroidism and thus a rise in the serum-cholesterol level, might be partly responsible for the high serum-cholesterol levels and coronary mortality in Finland in general and in East Finland in particular (*Authors' Summary*).

Goitre and Arteriosclerosis

UOTILA, U., RAEKALIO, J. AND EHRNROOTH, W. (*Lancet*, **2**: 171, 1958) from the Institute of Forensic Medicine, University of Helsinki, Finland, from a comparative study of postmortem findings in 250 persons who died of coronary sclerosis and of 250 persons who died from other causes observe:

Goitre was commoner, and the average weight of the thyroid was higher, in those with coronary sclerosis. Among the coronary-sclerosis cases, those with goitre had a tendency to lower average age at death and a higher average heart-weight.

Comparison of body-build showed that 250 persons with coronary sclerosis were slightly shorter and heavier than the controls. Among those with coronary sclerosis those with goitre were heavier than those without goitre.

These findings are correlated with observations made in Finland on the nature and distribution of endemic goitre, the iodine content of the food, and the distribution of coronary sclerosis.

It is concluded that goitre and arteriosclerosis may have a pathogenetic relationship, possibly through hypothyroidism and the overproduction of thyroid-stimulating hormone by the pituitary gland.

Blood Volume after Plasma and Blood Transfusion

WOLLHEIM, R. AND SCHNEIDER, R. W. (*German M. Monthly*, **3**: 237, 1958) from the Department of Medicine, University of Würzburg, write that the changes in circulating blood volume and haematocrit were measured at various times over 18 hours after 84 plasma and 49 blood transfusions. The results after the injection of Evans blue (T-1824) of samples drawn 4 and 9 minutes after injection were compared with simultaneously drawn samples analysed for ^{32}P or ^{51}Cr tagged red cells.

An increase in the amount of plasma or blood volume was obtained after only two-thirds of plasma and half of the blood transfusions. In the other instances the transfused blood or plasma passed into the blood reservoirs or in the case of plasma infusion—into the extravascular compartment already during the transfusion.

An increase in plasma and blood volume occurred particularly in those cases in which plasma or blood volume had been decreased before transfusion. This, it is suggested, points to a volume-regulating mechanism. An increase in volume was more likely after the transfusion of plasma than of blood.

CURRENT TOPICS

PREVENTIVE AND SOCIAL MEDICINE: ITS MEANING, SCOPE AND CONTENT

F. A. E. CREW, M.D., F.R.S.

Formerly Professor of Public Health and Social Medicine, University of Edinburgh

The term "preventive and social medicine" has recently come into frequent use. It is to be encountered as the title of an academic discipline, of a university department, of a book and of a scientific journal. Yet concerning its meaning there is much uncertainty.

The term "preventive medicine" used to have a very precise and restricted meaning. It was the name given to those ideas and practices which stemmed directly from the impact of the rapidly expanding science of bacteriology upon medical thought. At that time it seemed that each and every disease was a unique and specific condition, that each was caused by a specific micro-organism and that for each disease there was one single and specific form of therapy. Preventive medicine, as it then developed, took the form of the employment of a specific agent—vaccine, antitoxin and the like—to prevent a particular and specific disease developing in the individual and in the group attacked by a particular and specific pathogen, or to protect the individual and the group against the attack of a particular and specific disease-evoking agent. But with the passing of time it became manifest that all diseases were not of this kind and that such factors as endocrine imbalance, nutritional inadequacy, social maladjustment or occupational hazard, for example, could yield disease no less real and no less grievous than that associated with the pathogenic micro-organism. And so the attractive single-factor hypothesis of disease causation had to be jettisoned since it could not accommodate all forms of disease. But the term "preventive medicine" was retained and its meaning widened. It came to include any policy and any action within the field of medicine that had for its object the prevention of disease of any kind or the protection of the individual and the group against the hazards of disease of all kinds. This is its meaning today.

Some would stretch the meaning of preventive medicine still further to include policies and actions which aim at the early detection of a diseased state in order that therapy may be unleashed in attempts to preclude the further development of the pathological condition. This is not prevention; it is curative medicine intelligently employed; its avowed purpose is to treat and cure.

The preventive attitude and the preventive approach are not restricted to any particular branch of medicine. Prevention is surely the aim of all medicine. The clinician, physician or surgeon is concerned with the preventive aspects of his work as well as with the curative. Preventive action is not the monopoly of those medical men who deal impersonally with groups and categories rather than with individuals in series. It is true, however, that preventive policy and action loom far larger in the interests and activities of the medical officer of health, of the medical officer in charge of a maternity and child welfare clinic, of a school medical officer or of an industrial medical officer, all of whom deal with categories and groups, than they do in those of the consultant attached to a general hospital or of the general practitioner. Because of this difference in the relative importance of prevention in the thoughts and actions of these two groups within the profession of medicine, they have tended to exaggerate the difference in respect of attitude and aim that distinguishes them, and therefore to become separated and distinct in organisation.

"Social medicine" is a term that has been claiming its place in the medical literature for about a hundred years. It was first used by the editor of a Parisian medical journal in 1848 (at a time when in Western Europe strenuous attempts were being made to relate medical activities to the social reforms that were then taking place), to define those aspects of medical activity that affect society. Since that time the term has been used by many different writers, who have given it very different connotations. It was during the course of the Second World War that in the United Kingdom the term was disinterred from the limbo of half-forgotten things and used to indicate the nature of certain new developments within the medical field. At that time it seemed to many within the profession of medicine that the prevailing attitudes and aims were mistaken. To them it seemed that, both in teaching and in practice, interest had become too much focussed not upon the individual as a person but upon some particular part of him that was functioning imperfectly; not upon the causes of disease but upon its classification; not upon the prevention of disease and the promotion of health but upon the treatment and cure of diseased states already in existence; not at all upon the remote social effects of disease but solely upon the immediate effects upon the individual. A clamant demand arose that more attention should be paid to the root causes of health and of disease that were to be identified within the socio-economic sphere. To those who held these views it seemed that medicine, as it was being taught and practised, had failed completely in its service of society since preventible disease and ultimately death were as prevalent as before. They wanted to see, and to participate in, a revolutionary change in the organisation of the medical services of the country and in the interests and objectives of medical practice. It is to be noted that these views were presented by men who themselves belonged to the curative, to the clinical branches of medicine. An outcome of this revolution within the clinical field of medicine has been the formulation of a definition of "social medicine" that is widely accepted. According to this, "social medicine" is not a new medical speciality nor a new technique, but a new attitude. It embraces all aspects of medicine, places the major emphasis on man as a social being and endeavours to study him in and in relation to his total environment and also to study the ways in which this environment, including the social environment, influences his health.

At about that time great changes had been affecting the branch of medicine variously known as "public

health", "preventive medicine" or "hygiene", consequent upon a progressive movement of the emphasis within this field away from the purely medical (problems of health) to the socio-medical (problems of welfare). To many it seemed that the dichotomy between health and welfare had been a mistake and should be removed. Most of those engaged in this field, however, were quite satisfied that the label they bore, "public health", was still perfectly adequate and were not greatly interested in the suggestion that in order to indicate the change in their interests, away from the problems arising in the external physical world of the community and towards the problems that had their root causes in the socio-economic sphere, it would be helpful to change the name of their subject from "public health" to "social medicine". Social medicine certainly cannot be used as a synonym for public health, for this has a very specific and definite meaning. Public health encompasses all those interests and activities which relate to disease prevention and to health promotion that are characteristic of the medical services of local authority. Its purpose is to ensure healthy conditions of life for the citizens. It is based upon the social theory that the community as a whole should and must do those things requisite for the health of the individual citizen that he cannot do for himself in an organised society. It has grown with the growth of society itself and has become more comprehensive in its scope as the social organisation has become increasingly complex. Not long ago, in the United Kingdom, public health was concerned almost exclusively with the cleansing of the external physical world, freeing it from all disease-evoking agencies, living and non-living. The reason for this was that, at that time, the diseases of the greatest social importance were those whose causal agents were to be found in this external physical world. So it is in many countries today. The disease responsible for most sickness and for most death are of this kind, and therefore in underdeveloped countries the main effort in the field of medicine should be directed to the cleansing of this environment. Environmental sanitation was the outstanding need in the United Kingdom fifty years ago; it is the greatest need in South East Asia today. Today, in the United Kingdom, these tasks have been transferred, to a large extent, to the professional sanitarian, under the general supervision of the medical officer of health. The sanitary inspector (in many countries, the sanitary engineer) is the man now primarily concerned with the creation and the maintenance of an external physical environment that is propitious for the development and maintenance of health in the individual citizen and in the community as a whole. The medical officer of health has, at the same time, been assuming other responsibilities of quite another kind, e.g., the provision of medical care for the special categories within the population, the convalescent, the physically handicapped, the aged, the problem family and the like, and has added to his staff a wide variety of *social* workers, developments which indicate in the clearest possible fashion that his interests and responsibilities relate in increasing measure to man as a social being rather than to man as a member of a biological, ecological, system—with the disease-evoking, health-promoting agents within the socal environment rather than with those in the external physical environment. This certainly is a move away from "public health", as defined, towards "social medicine", as defined above. Thus, both in the field of curative medicine and in that of public health, the same ferment was working. As had been recognised in paediatrics for some time, a sick infant was not the same as a pathological condition in that infant. A sick infant could not be considered alone, for its sickness affected a whole family. The family needed treatment no less than the infant who was one of its component members. So also in psychiatry it had been found that one did not treat a condition but a whole person. The notion that was struggling to find expression was that medicine in action was total medicine applied to the affairs of a total person who was not to be considered apart from his total external world. The demand that in diagnosis and therapy careful consideration should be given to the socio-economic circumstances of the patient created a demand for the development of a discipline that was at that time very rudimentary—medical sociology. The development of social medicine has been the response to that demand.

"Social medicine" can perhaps best be defined as that corpus of knowledge and that constellation of skills which are concerned with the place and function of medicine in an organized society, with medicine as a social science, with medicine as an instrument of social policy. When once governments proclaim that one of their major preoccupations is the conservation and augmentation of the citizens' health, medicine becomes that storehouse of knowledge and skill upon which the community must draw if effect is to be given to this social aim. Politics, in this context, is the art of applying medical knowledge to human and social affairs in intelligent attempts to increase the sum total of the people's health, happiness and efficiency. Medicine provides the scientific knowledge and the recommendations that stem from this. Thus politics and medicine become harnessed in this great adventure in the field of human ecology, in attempts to create a society in which all the benefits of medicine shall have been exploited in the service of the community.

Implicit in this view is the suggestion that the "social medicine" himself is not concerned with the application of the knowledge and skill that pertains to his subject in therapeutic action. This is so. In this he is like the pharmacologist, for example. He enlarges the store of verifiable knowledge in a particular field of interest and enquiry. This knowledge becomes available for incorporation into diagnostic and therapeutic considerations and techniques by those who are practitioners of medicine. Medicine itself implies action, it is the application of all relevant knowledge and of all appropriate skills in the preservation, augmentation or restoration of health in the individual or the group. Medicine and the practice of medicine are one and the same thing. A textbook of medicine invariably is close-packed with information concerning therapy, which is action. *A textbook of bacteriology is not. It parades knowledge and proffers recommendations concerning its possible utilisation. Social medicine—medical sociology—likewise con-*

sists of knowledge and recommendations, implicit or explicit. Essentially it is knowledge that relates to the group and not to the individual, but knowledge concerning health and disease in the group most certainly has its applications in studies of these states in the individual. "Social medicine" as defined in the *Journal of Preventive and Social Medicine*, the journal of the Society of Social Medicine, (British), is "that branch of science which is concerned with (a) the biological needs, interactions, disabilities and potentialities of human beings living in social aggregates, and (b) with the numerical, structural and functional changes of human populations in their biological and medical aspects. It is concerned with the scientific assessment of all projects and policies that have for their object the achievement of positive health.

"As a scientific discipline, social medicine is divisible into social pathology and hygieology, sciences which, employing the methods of statistical and field epidemiological and environmental, socio-medical and somatometric surveys, are concerned with the study of human experience in relation to the changing opportunities and hazards."[1]

Since the medical officer of health and his like are concerned with problems of health and disease in the group, it follows that the content of social medicine is much nearer their interests than it is to those of the consultant of the large general hospital or to those of a general practitioner. A great deal of their work is essentially preventive, and knowledge that pertains to the field of social medicine partly forms the basis of such preventive action.

Since the statesman deals with a total population and since social medicine is particularly concerned with studies of medicine in relation to society as a whole, it follows that among those who apply the knowledge that belongs to the field of social medicine is the statesman.

The instruction offered in an academic department of social medicine gives the best indication of the content, scope and relationships of the subject. It usually includes ; a demographic study of a particular population ; a critical survey of the development of medicine as an instrument of social policy, with special reference to a particular country ; an examination of the diseases that are responsible for the bulk of the morbidity and mortality in that country and an examination of the factors that operate in their causation ; a survey of the socio-economic conditions within that society in so far as these affect the health of the population ; an examination of the medical and allied social services in that country, their organisation and utilisation; and an attempt to assess the value of the contributions made by these services to that society.

This is not the description of an attitude, new or otherwise ; in so far as the education of the medical undergraduate is concerned, it is a new subject, a new addition to the curriculum, a new academic discipline. The incorporation of the knowledge that belongs to this new field of interest into diagnostic and therapeutic policy and action may well be a reflection of a new attitude and a new approach on the part of the practitioner of medicine, but the knowledge that is or is not so applied constitutes the science of social medicine.

To a course of instruction in social medicine there is almost invariably added a series of lectures in the older epidemiology and environmental sanitation (the older public health). The reason for this is twofold. It is still very desirable indeed that the medical student should acquaint himself with the principles of these subjects even though he himself is not to be involved in epidemics, water purification, sewage disposal and the like. Secondly, many of those who occupy the academic chairs of social medicine in Great Britain and elsewhere are such as previously had long service as medical officers of health,—an interesting observation, not to be forgotten when considering the inter-relations between social medicine and clinical medicine and public health respectively. To teach the older public health is an easy undertaking, for its content has long since been systematised. To teach social medicine is not so easy, for it is a rapidly growing subject with its boundaries not yet precisely defined. It is a science, and for its enlargement and presentation those who possess scientific qualifications and attitudes are required. The time will certainly come when, in countries like the United Kingdom, the undergraduate instruction offered by a department of social medicine will no longer include any considerable reference to the older public health for environmental sanitation, as a subject, has passed to another profession, that of the sanitarian, whereas the communicable diseases save for a few "notifiable" ones, will have passed to the territory of the clinician. In Great Britain the end of the special "fever" hospital, an isolation hospital, is in sight.

It is not uncommon to find that the department of social medicine has accepted responsibility for offering instruction in such diverse subjects as medical genetics, medical statistics, personal hygiene and in the medicine of general practice. While praise must be given to those who provide services of great value to the Faculty of Medicine as a whole, it is necessary to insist that these quite important subjects do not form part of the content of social medicine itself any more or any less than of the content of any of the other disciplines which in their sum constitute the curriculum. It is important to distinguish between the contributions of a department to the school and of a subject to the curriculum. It certainly is the case that the importance of the socio-economic factor in disease-causation and in health-maintenance can best be recognised by the student who enters the homes of patients. The world of the large hospital is very different indeed from that of open society. For this reason a department of social medicine can make very full use of a community medical service for investigational purposes. But it is to be noted that action stemming from the identification of a socio-economic factor in disease-causation is an essay in medicine (or in almoning) and not in social medicine.

The origins and early development of social medicine in the United Kingdom became and remain somewhat obscure for the reason that at the time when they occurred, the British pattern of "socialised" medicine

[1] Review of the Conference in Social Medicine (unpublished)—The Nuffield Foundation.

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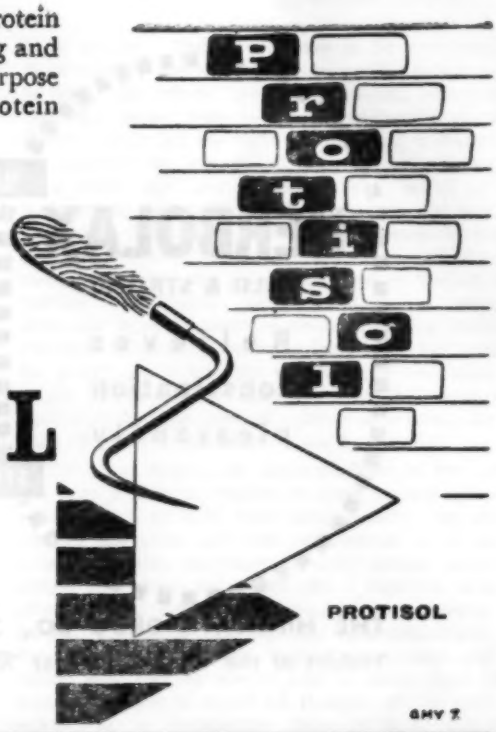

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was taking shape. Socialised medicine merely means that a government, being persuaded that medicine has gifts of great value to offer, takes such steps as it deems desirable to make these gifts freely available to all within the population, irrespective of rank, sex, income or of everything else. This necessarily means that the government must interfere with the doctors' conduct of their own professional affairs. There have to be an organisation and a bureaucracy, rates of payment, limitations to the size of practices and the like. In Britain, the National Health Service, as it is called for reasons that remain obscure, has become an organisation designed to deal with "disease" to facilitate the practice of curative medicine, to make available to fall within the population the very considerable gifts which curative medicine has to offer. Its roots probe deeply into the soil of the large general hospital with its associated laboratories.

This organisation of the medical servises is of interest to the student of social medicine for the reason that it is meant to be one specially designed to satisfy the medical needs of a particular population. It is to be judged by its discernible effects upon the course of morbidity and mortality in this population. As is perfectly obvious, socialised medicine is not social medicine.

The combination of these terms "preventive and social medicine" in the title was made with deliberation. In order to make it clear that the "social mediciner" is more interested in problems of health-promotion and disease-prevention than with the cure of disease the word "preventive" is included. It is meant to indicate that the subject is much more closely allied to the interests of the medical officer of health, of the specialist in child-life and health and of the psychiatrist concerned with mental health than to those of the consultants and general practitioners in the field of curative medicine. The social medicine part of the title is used to emphasise the fact that the subject is primarily concerned with the study of the interconnections of the interests of medicine and of the interests of society.

The purpose of medicine, by promoting health, preventing ill-health and restoring health, is to enable individuals to achieve and maintain an adjustment with the conditions, circumstances and content of their environment, physical and social. Disease is, of course, not the only cause of maladjustment, and thus it is that other fields of human interest,—education, law, religion, for example, share a common purpose with medicine ; all are closely interwoven, and medicine is but one link in a chain of social institutions, all of which attract the interest of the "social mediciner". In all medical action two parties as well as two individuals are concerned—the profession of medicine and society as a whole. The physician and his patient are not only two individuals ; they are also two citizens with obligations to the society of which they are members. Medical action can have, and commonly does have, social repercussions ; the solution of a problem seemingly affecting a series of single individuals is followed by the creation of another of considerable social importance. If, for example, it were possible to cure very swiftly all the thousands of lepers in a particular society, they, being cured, would at once demand readmission into the society from which they have been outcast. They would have to be readmitted, but their re-entry into the community would create a number of acute and difficult problems economic, industrial, social—that would tend to cause considerable disruption. Society surely has the right to insist that in the practice of medicine the interests of society, of the community as a whole, shall not be disregarded. Social medicine is especially concerned with such matters and seeks the knowledge that should enable the profession of medicine and the community as a whole to form warrantable judgments concerning the possible outcome of medical intervention. Conversely, social medicine is especially interested in new legislative measures. These inevitably, directly or indirectly, more or less, affect the health of the people. It is from the storehouse of knowledge that is fed by the medical sciences, including social medicine, that the firm basis of opinion concerning the possible effects of a new measure can be obtained.

The prime function of social medicine in the curriculum is to permit the student to orient himself within the society which he is to serve professionally. By demonstrating the place and role of medicine in a modern society it permits the student to equip himself more completely to become its practitioner. Together with the other medical sciences it attempts to encourage the student to cherish carefully the open-mindedness, the fair-mindedness, the rigid intellectual honesty and the ethical neutrality of science and to allow these grand human attributes to mould his thoughts and to guide his actions as a professional man.—*Medical Education Bulletin* (WHO Regional Office for S.E. Asia), Vol. 3, No. 2, Aug. 1958, pp. 2-8.

EDUCATION OF MEDICAL SPECIALISTS IN THE U.S.S.R.

PROF. V. MAVAT,

Dean of the Faculty of General Medicine
Second Medical Institute of Moscow

Medical science has made great progress, especially in the last decades, not only in the investigation of various physiological and pathological processes at work in the organism, but also in the prevention and treatment of diseases. New subjects have appeared, and the old subjects have grown so vast that their assimilation requires much more time than before. As a rule, therefore, the medical institutes have a six-year course of study.

The medical institutes have the following faculties : general medicine, pediatry and stomatology. Most of the stomatologists, however, are educated at special stomatology institutes.

PROGRAMME OF STUDY

The programme for the first and second years is confined to theory; third-year students begin to undergo practice at the clinics. First-year students are instructed in medical physics, biology, anatomy, histology, inorganic, analytical and organic chemistry, Latin and foreign

languages; the programme covers also social sciences and physical training. Biological, physical and colloidal chemistry are added in the second year. Physiology is taught throughout the second year, and microbiology is added in the second semester. There is practically no difference in the programmes for the first and second years in the faculties of general medicine and paediatry.

Third-year students are instructed in pathological anatomy, pathological physiology, pharmacology, hygiene, Roentgenology, general surgery, propedeutics of internal diseases and topographical anatomy with operational surgery. After the third year, students are sent for practice in the hospitals where they learn to tend the sick and to dispense the prescriptions of the doctors.

Fourth-year students are required to undergo practice at the therapeutic and surgical, urological and obstetrics and gynaecology clinics, at the tuberculosis clinic, clinics of nervous disorders, skin diseases, ear, nose and throat diseases. In addition to that they study operational surgery, hygiene, history of medicine, physiotherapy and the organisation of the health protection. After completing the fourth-year course, students are sent for practice to the district hospitals where they work for two months at the therapeutic, surgical and obstetrical wards.

The subjects added in the fifth year are childhood diseases, psychiatry, eye diseases, infectional diseases, corrective exercises and forensic medicine.

During the last year at the institute, students work as doctor's assistants, taking charge of 4-6 patients. They spend 10 weeks in each of the two clinics; therapeutical and surgical. For two weeks the future doctors undergo practice at the traumatological clinic, and for five weeks at the clinic of infectious diseases, studying epidemiology at the same time; one week is assigned for practice at the tuberculosis dispensary and six weeks at the obstetrical clinic, or maternity home. Thirty-five weeks of clinical practice (in the sixth year) in the main clinical subjects produces very good results. Special attention is devoted in the last years at the paediatry faculties to childhood diseases which are studied for three years at various clinics for children.

Semestral check-ups and examinations are arranged every year at the end of the respective semester. Examinations are taken in 2-5 subjects. For example, the second-year student is required to take state examinations in anatomy, histology, biological chemistry and physiology. Graduating students of the medical institutes take state examinations in the main clinical subjects, hygiene and social sciences.

Educational methods are based mainly on lectures and independent work done by the students. In addition to the obligatory studies there are optional courses, as for example, courses in dietetic food, endocrinology, balneology and other subjects; attendance of these lectures is left to the student's choice.

Great significance is attached to the scientific student's groups. Although affiliation is strictly voluntary, many students are conducting extensive research in these circles. Papers are read by students on various scientific topics at the conferences of the student scientific society. The best papers are awarded prizes and printed in the collections published by the institute.

After graduation, the medical specialist receives his diploma and an appointment. Information about available vacancies is given at the institute. The young doctors are required to work 2-3 years as general practitioners, whereupon they may take a post-graduate medical course, or specialise in a clinic or big hospital in the chosen field. After that they work as therapeutists, surgeons, obstetricians and gynaecologists, specialists in contagious diseases, oculists, etc.

Doctors with a leaning for scientnfic research are given the opportunity for post-graduate studies. After a post-graduate course of 3 years, the doctor practises in his chosen speciality and prepares his thesis for an M.S. degree in medicine. This thesis is presented at a public hearing.

No tuition fees are charged in the medical institutes, just as in other higher schools of the U.S.S.R. More than this—state stipends are paid to the overwhelming majority of students. A stipend, equivalent to the salary of an ordinary doctor, is paid to interns and post-graduate students.

This in brief is how specialists are trained for the medical profession, medical practice, medical research and for lecturing at the medical colleges. The high level of education makes it possible to assure skilled specialists to the Soviet health services and to further the general progress of medicine.

NOTES AND NEWS

Study Tour to USSR Organised by W.H.O.

Five senior public health administrators from WHO's South East Asia Region left New Delhi on October 15, 1958 for Moscow on a six-week tour sponsored by WHO during which they will study public health administration methods in the USSR and its constituent republics.

They will be joined in Moscow by 18 other participants from various countries of the world. The 23-man group will be led by Dr. J. Peterson, Director of the Division of Organization of Public Health Services at WHO Headquarters in Geneva.

The Indian member of the group is Dr. N. Jungalwalla, Director, All-India Institute of Hygiene and Public Health, Calcutta. Other members from South East Asia are : Dr. U. Kyaw Sein (Burma) ; Dr. W. A. Karunaratne (Ceylon) ; Dr. Adjidarmo (Indonesia) and Dr. Rrb na Bangxang (Thailand).

The six-week study tour will include visits to medical and health institutions in Russia, observation visits to work in the field carried out at different levels of government administration, and exchange of views on the spot with local and national health administrators.

Problem of Filariasis Control in South East Asia

Researches in the field of filariasis carried out in India during the past several years hold out the hope that effective control of this disease, which has defied medical effort for such a long time, may become possible.

This view was expressed by Lt. Col. Jaswant Singh, Director-General of Health Services, Government of India, while inaugurating a WHO-sponsored filariasis study tour at the Malaria Institute in Delhi on October 23, 1958.

Filariasis experts from Burma, Ceylon, India, Indonesia, and Thailand will, for four weeks, visit filariasis control centres and programmes in progress in different parts of India and Ceylon.

Referring to research in filariasis control, Col. Jaswant Singh said specially valuable work had been carried out in the States of Orissa and Kerala under the auspices of the Indian Council of Medical Research.

With the knowledge now available on the prevalence of filariasis and methods of prevention, Col. Jaswant Singh said, one could foresee a time when filariasis would no longer be the same major public health problem. While it might linger longer than malaria he had no doubt that with the aid of newer insecticides and synthetic drugs and also with the awakening of the people to an understanding of the problem it would be possible to defeat the scourge.

College of Physicians of Philadelphia

On July 14, 1958, the College of Physicians of Philadelphia awarded the Alvarenga Prize for 1958 to Michael E. DeBakey, M.D., Professor of Surgery, Bylor University, School of Medicine, Houston, Texas, for his outstanding work in the surgical treatment of diseases of blood vessels. The Alvarenga Prize was established by the Will of Pedro Fransisco DaCosta Alvarenga of Lisbon, Portugal, an Associate Fellow of the College of Physicians of Philadelphia, to be awarded annually by the College of Physicians on the anniversary of the death of the Testator, July 14, 1883.

Soviet Experts Report on Basic Drugs Manufacture

The leader of the Soviet expert team on drugs and pharmaceuticals, Mr. A. G. Natradze, presented on October 14, 1958 a report on the development of the basic drug industry in India to the Minister for Industry, in New Delhi.

The expert team arrived in India in the beginning of August at the invitation of the Government of India to advise on the development of the drugs and pharmaceutical industry. The experts had discussions with an Indian technical team and also toured different parts of the country to study the progress achieved by the Indian pharmaceutical industry.

Research and Development of Drugs

The Council of Scientific and Industrial Research in a meeting held recently has accepted the proposal that the new drugs evolved at the Central Drug Research Institute will be put to clinical testing at a number of hospitals in the country. Plans were also approved for putting up a laboratory at Calcutta for the Indian Institute for Biochemistry and Experimental Medicine at an estimated cost of Rs. 24.00 lakhs. This Institute will undertake research work in microbiology, biochemistry, physiology and pharmacology and other scientific aspects which have a bearing on experimental medicine.

Nobel Prize for Medicine

Three American scientists were awarded the Nobel Prize for Medicine this year for developing a genetic research technique that has been used on cancer and other medical problems.

The winners, American by birth, are Dr. George Wells Beadle, Professor of Biology at the California Institute of Technology, Pasadena, Dr. Edward L. Tatum, head of a department at the Rockefeller Institute for Medical Research, New York, and Dr. Joshua Lederberg, Professor of Genetics at the University of Wisconsin, Madison.

Their work concerns the actual basis of heredity– the way in which characteristics are transmitted from one generation to another. Their technique has become one of the most important tools in the study of cell metabolism. Now widely used, it has given important results on various biological and medical problems.

One half of the prize went jointly to Dr. Beadle and Dr. Tatum for their discovery that genes act by regulating definite chemical events. The other half went to Dr. Ledergert for his discoveries concerning genetic recombination and the organisation of the genetic material of bacteria.

C.S.I.R. Fellowship for Scientists

The Council of Scientific and Industrial Research has decided to enhance the rate of stipend of junior research fellowship from Rs. 200 p.m. to Rs. 250 p.m. fixed and in the case of certain specialised subjects to Rs. 300 p.m. to encourage young and brilliant scientists to pursue research in the scientific and technological fields.

According to an official Press release, the Council has also decided that for certain specialised subjects the senior fellowships will be of the value of Rs. 400 and Rs. 500 p.m.

The Council has been awarding junior and senior research fellowships for research work in National laboratories and institutes run by the Council as well as in other research institutions, university laboratories, scientific and technological colleges.

About 400 scholars are at present receiving these stipends.

Minimum Age for Admission to Medical Colleges

The Medical Council of India decided to recommend that the minimum age for admission to medical colleges should be 17 on October 1 in the year of admission.

The executive of the Council had earlier recommended that the minimum age should be 17 years on January 26 following the year of admission.

The change was contained in an amendment to the Executive's recommendation moved by a member who said that the student who entered the course should have attained "maturity of mind". The Council accepted the amendment.

Sanitation Schemes for Punjab

The Punjab Sanitation Board at a recent meeting approved urban and rural schemes estimated at Rs. 50 lakhs.

The urban schemes relating to drainage and water supply will be implemented in Rohtak, Budlada, Sohna, Bahadurgarh and Shahbad. The rural schemes will be carried out in Hissar, Gurgaon, Sangrur, Bhatinda, Kangra, Mohindergarh, Rohtak, Ambala and Patiala districts.

Family Planning Centres in West Bengal

A total of 54 Family Planning Centres have been opened in West Bengal, according to a Press Note issued by the State Government.

Of these centres 22 have been started in Calcutta. The rest are located at different places covering all the districts except Purulia.

Milk Production in Madras

Dr. Stark, Dairy Production Adviser to the Government of Madras emphasised the need for producing milk in hygienic conditions and said the bacteria content in milk could be reduced by pasteurization of the milk obtained under good sanitary surroundings.

Addressing the members of the Microbiologists' Association of India, at the Madras Veterinary College, Dr. Stark said "in America, even one ounce of certified milk taken from cows or buffaloes under the supervision of medical men had 10,000 bacteria." The milk produced in this country, he said, might contain more. He expressed the hope that, as in America, medical men in this country could do something to produce nutritious or quality milk under proper conditions.

Treatment of Tuberculosis in Andhra

Mr. N. Sanjiva Reddy, Chief Minister, Andhra Pradesh on October 16 called upon non-official agencies and the public to extend their co-operation in achieving the target of setting up at least one tuberculosis unit at every district headquarters hospital with 100 beds each during the next five year period.

The Chief Minister, who was presiding over the annual general meeting of the Tuberculosis Association of Andhra Pradesh, explained that medical facilities were more easily obtainable for people in urban areas while the rural folk could not get the benefit for want of adequate assistance. He felt happy that the public were doing their best in the matter of organising tuberculosis institutions and instanced the case of Mangalagiri hospital.

Domiciliary Treatment of Tuberculosis

Dr. K. K. Hegde, Health Minister of Mysore, inaugurated at Mysore the domiciliary treatment service for tuberculous patients—the first in Mysore city. Under the scheme doctors will call on patients and render them medical aid free of cost.

Dr. Hegde said proposals were also under consideration for establishing T.B. demonstration and training centres in Bangalore.

Uttar Pradesh Medical Council

The Council in its meeting held on August 5, 1958, resolved that the name of Dr. Amal Gupta, M.B.B.S. (Plate Reg. No. 5187) be restored to the medical register after a lapse of three years from the date of removal of his name from the medical register.

West Bengal Medical Council

The Registrar of the Council has issued the following :

Attention of all medical practitioners registered under the Bengal Medical Act, 1914, is invited to the views of the Council that any payment made by a registered medical practitioner for inclusion of his/her name in a separate classified list in the Telephones Directory amounts to advertisement and violation of the code of Medical Ethics.

Stanley Medical College Old Students' Association

The hony. secretary, Stanley Medical College Old Students' Association, Madras, has appealed to all old students of the College to enroll as members by paying the requisite fees and to offer suggestions for a better organisation of this association. Further information may be had from the hony. secretary of the Association, 72 Armenian Street, Madras 1.

CORRESPONDENCE

The Editor is not responsible for the views expressed by correspondents

Nutritional Macrocytic Anaemia in India

SIR,—Dr. J. B. Chatterjea in the course of his article on Nutritional Macrocytic Anaemia in India (*J. Indian M. A.*, **31** : 4, 1958) had stated that neurological manifestations are usually absent in nutritional macrocytic anaemia and subacute combined degeneration has never been seen. I reported a case of sub-acute combined degeneration in a case of nutritional macrocytic anaemia ; the case is reported in full and published in the August 1955 issue of the *Antiseptic*.

I am etc.

Hyderabad. S. VENKATESWARA RAO, M.D.

* * * *

SIR,—I have read with interest the article of Dr. S. V. Rao. His patient aged 55 had no doubt signs of involvement of posterolateral columns. But the anaemia is stated to be microcytic and it appears that bone marrow examination was not done. Under the circumstance, I would feel a little hesistant to label this as a case of nutritional macrocytic anaemia which was the subject matter of my paper.

I am etc.

Calcutta. J. B. CHATTERJEA.

SIR,—I read with great interest Dr. J. B. Chatterjea's article on 'Nutritional Macrocytic Anaemia in India' published in your esteemed journal (*J. Indian M. A.*, **31** : 4, 1958) and I am grateful to him for the thanks given to me. Dr. Chatterjea is to be congratulated for the excellent work on the studies of Vitamin B_{12}, folic acid and iron in nutritional anaemias reported in the paper. I would, however, like to point out that I do not agree with his view that 'liver extracts have rather limited scope in the routine management of N.M.A.' He points out (p. 9), and rightly too, that an average Indian diet is deficient more in vitamin B_{12} than folic acid and this is supported by the assay of the vitamins reported by him. But still he argues that 'deficiency of folic acid is usually the primary and major factor' in N.M.A. (p. 9). This is based on his assumption that folic acid is universally successful in N.M.A. (p. 9). It is true that an earlier publication (Das Gupta, C. R., Chatterjea, J. B. and Basu, P.—*Brit. M. J.*, **2** : 645, 1953) we assumed that 'deficiency of folic acid is probably the major or primary factor' in N. M. A. but it is equally true that in the same article the superiority of crude liver extract over folic acid and vitamin B_{12} in some cases of N. M. A. was emphasised. Also in another publication (Das Gupta, C. R. and Chatterjea, J. B.—*Indian M. Gaz.*, **81** : 402, 1946) it was pointed out that the 'deficiency factor or factors in nutritional macrocytic anaemia cannot always be made good by folic acid alone'. In the same article it was shown that the cases with absolute achlorhydria as also the cases with total protein level below 4·0 g. per cent did not show good improvement with folic acid. Though Dr. Chatterjea is in agreement with the last observation (p. 10) he still contends that 'most of the cases with hypoproteinaemia could be cured with folic acid alone' (p. 9) and again he does not give any data in support of his contention. His argument that folic acid along with a good diet will cure the vast majority of the cases of N. M. A. (p. 9) is also not supported by any data. Further, it is to be noted that in Table 1 of the article showing differentiating features of N. M. A. and P. A., crude liver extract and folic acid are shown to be equally effective in N. M. A.

Past clinical trials with Crude Liver Extract (Das Gupta, C. R.—*Indian M. Gaz.*, **78** : 34, 1943), Proteolysed Liver Extract (Das Gupta, C. R., Ganguli, S. and Chatterjea, J. B.—*Indian M. Gaz.*, **81** : 122, 1946), Folic acid (*Indian M. Gaz.*, **81** : 402, 1946) and Vitamin B_{12} (*Brit. M. J.*, **2** : 645, 1953) did not only show the effectiveness of crude liver extract in N. M. A. but in a number of cases its superiority over folic acid and vitamin B_{12} was amply demonstrated. The contention about the effectiveness of liver in anaemia is supported by Whitby and Britton (Disorders of Blood, 7th Ed., 1953, p. 206-7) who are of opinion that 'various liver extracts, liver preparations and even liver itself have still a place in the therapeutics of anaemia despite the advent of cheap supplies of vitamin B_{12} and folic acid'. I, however, fully agree with Dr. Chatterjea that the use of impotent liver extract will give indifferent results and that a suitable and dependable method for assay of liver extract has yet to be developed. But, nevertheless, there is no lack of potent Indian made liver extract and Dr. Chatterjea is fully aware that vigorous efforts are in progress for standardising the properties of potent liver extracts which on account of the complex nature can only be assayed by clinical trials. It will be a pity if the use of liver extract is undermined on that account. And, in addition to the clinical evidence quoted above, the routine use of folic acid in the management of the very large number of nutritional macrocytic anaemia in India will be economically unsound as the vitamin is wholly imported from outside and is not at all cheap.

Finally, the crude liver extract, the haemopoietic activity of which is not wholly dependent on its vitamin B_{12} and folic acid content (Girwood, R. H., *Lancet*, **2** : 346, 1949; Ostling, G., *et al—Acta med Scandinav.*, **145** : 40, 1953) must continue to be the drug of choice in the routine treatment of N. M. A., the deficiency factor or factors of which are still to be identified.

I am etc.

Calcutta. C. R. DAS GUPTA.

* * * *

SIR,—I welcome heartily the kind comments of Dr. C. R. Das Gupta. I agree that in this paper all my statements were not always supported by data. But it may be noted that I had referred to our published papers which contain relevant data regarding the efficacy of folic acid. I may further add that we have necessary data in support of all our statements. I believe that in the interest of the main theme of the paper, there was no scope of presenting detailed data relating to comparative value of crude liver extract and folic acid.

In Table 1, I have very clearly indicated that liver extract and folic acid are equally effective in N. M. A. Therefore the question of undermining the value of liver extract does not arise. For various reasons explained in the paper it, however, appears that in the routine management of N. M. A., folic acid (*plus* vitamin B_{12}, if necessary) would be preferable. But if some one would prefer crude liver extract, he can certainly use a *potent preparation* and this, I presume, is a matter of individual choice. Fortunately potent liver extracts are made in India.

Dr. Das Gupta has rightly raised the point that folic acid is at present imported from abroad. I fully agree that its use is not sound from the point of view of national economy. But we cannot at the same time deny the intrinsic value of these essential vitamins. I believe that it is high time for us to get organised in our efforts for the production of folic acid and vitamin B_{12} in our country. If our objective is clear, this should not be difficult to achieve. If I emphasise the need for producing these essential vitamins in our country, investigative work on liver extract for improving its quality or for isolation of new haemopoietic agents should not in any way suffer in consequence. Past chapters on researches relating to liver extracts have been so remarkably brilliant that one certainly looks for significant findings in future.

Dr. Das Gupta has quoted foreign authorities like Whitby and Britton (1953), in support of his contention. I do not think that it is always desirable to take for granted what foreign scientists opine about Indian condi-

tions. I may, however, submit that the latest edition of the same book (Whitby and Britton, 1957) contains statements which strongly support my contention. Thus in page 257 (lines 11-13) of the book, it is written—"There seems little doubt that the megaloblastic features of the disease as seen in India are in the main due to folic acid deficiency". It may be noted that this opinion was perhaps influenced by our papers on the subject and these have been properly referred to. By our papers I mean the papers published jointly by Dr. Das Gupta and myself. Finally I would point out that in the same page (lines 44-46) of the above text book, the first sentence under treatment reads "Folic acid in doses of 5-20 mg. or even 50 mg. a day causes a rapid and satisfactory response (Spies *et al*, 1948). This is the treatment of choice".

I am etc.

Calcutta. J. B. CHATTERJEA.

* * * *

Ayurvedic Education in Uttar Pradesh

SIR,—With reference to the request of Dr. Dhown for views about teaching of Ayurveda (*J. Indian M. A.*, **31** : 265, 1958) I would like to air the following views :

(1) One cannot deny that there are some valuable drugs in Ayurvedic science. But all these drugs should be examined by the scientific yardstick in a well-equipped modern institution. Later, Ayurveda can be taught, as a special subject, in the post-graduate curriculum.

(2) Merging of B.M.B.S. students with those of M.B.B.S. would not be advisable as it would create confusion and lower the standard of allopathic degrees.

I am etc.

Calcutta. K. K. BAJAJ.

REVIEWS

Methods in Medical Research, Vol. 7—Editor-in-chief—James A. Warren. Published 1958 by the Year Book Publishers, Inc., 200 East Illinois Street, Chicago, U.S.A.; board bound, 8¼″×5¼″, 237 pages; price $7.50.

This book is the seventh volume of a series which is being brought out by the publishers with the help of a Governing Borad of five eminent persons. Each volume presents a variety of methods used in various types of medical research, written by separate authorities with an editor for each group and an editor-in-chief for each separate volume. This volume has a large number of papers by many authors, collected together in four groups : Chemical investigation of muscular tissues, Hemodynamic methods—heart and lungs, Methods for the study of human leukocytes, and Methods for study of the histology and cytology of the retina. The papers describing the various methods are mostly well-depicted and clearly written, and are thus likely to be of much help to those who are intending or actually engaged in research in any of the broad groups described in this book. It appears that the governing body and publishers together have been offering very helpful volumes describing, one after another, the various methods at present employed in medical research—volumes to be kept available for the benefit of the research workers, in all institutions where medical researches are carried on.

Carcinoma of the Lung—A NAPT Symposium—Published by the National Association for the Prevention of Tuberculosis and Diseases of the Chest and Heart, Tavistock House North, Tavistock Square, London, W.C. 1, England; paper bound, 7¼″×5¼″, 48 pages; price 6sh.

This neat little book consists mainly of the report of a meeting held in London on 22nd November 1957 under the chairmanship of N. Lloyd Rusby, M.A., D.M., F.R.C.P., who said in his introduction that out of 15,000 cases, radical operation could be performed on only one in five patients and of these, only a few survived five years. This clearly shows the magnitude of the problem of patients with thoracic malignancy, which is naturally more difficult in cases unsuitable for surgery. Besides the introductory remarks of the chairman, there are nine small reports by well-known authorities which make a reading of this book highly thought-provoking.

Endocrine Pathology of the Ovary—By John McLean Morris, M.D. and Robert E. Scully, M.D. Published 1958 by The C. V. Mosby Co., 3207 Washington Blvd., St. Louis, Missouri, U.S.A.; board bound on cloth, 10″×7″; 15 pages with 75 illustrations; price $8.50.

The gynaecologist, the paediatrician and the internist are often confronted by a clinical picture of endocrine disorder and wish for more information as to the possible underlying ovarian abnormalities. This book will enable such pathological information to be easily understood, collated and checked up. Also, this book will be of help to the pathologist in the identification of such morphological changes as well as to acquaint him with their functioning potentialities. With the help of the number of illustrations drawn from quite a large amount of available clinical and pathological materials, this book will be able to correlate the pathological changes occurring in the ovary with the accompanying clinical endocrine findings and to evaluate both in the light of the material available for study. Lists of references, following each chapter, will help the reader to further reading. Altogether, this is a good book, including its paper, printing and binding.

Aids to Pre- and Post-operative Nursing (Nurses' Aids Series)—By N. L. Wulfsohn, M.B., B.CH., D.A. Published 1958 by Bailliere, Tindall and Cox, 7 & 8 Henrietta Street, London, W.C. 2; board bound, 6½″×4¼″, ix plus 219 pages; price 8s. 6d.

This small book is one of the "Nurses' Aids" series which "aims at providing concisely, clearly and simply just that quantity of information which the nurse needs to possess, gathered together in well-illustrated, easily read and easily carried volumes at a price within the

means of any nurse". Pre-operative and post-operative nursing care is always an important part of the nurse's work and there is also a grave responsibility, for it is at this stage in the nursing of a patient that situations often arise which can quickly and easily go wrong. Yet a very few seems to have been written—for the nurses—to cover this important field of their responsible work. This book sets out in simple language, the details of pre- and post-operative nursing care and is recommended for careful reading not only to the nurses but also to the ward-sisters who have to teach and supervise them.

Lehrbuch Der Gynakologie—By Prof. Dr. Med. Heinrich Martius. Revised fifth edition, published 1958 by Georg Thieme Verlag, Stuttgart, Germany; board bound with paper jacket, 10½"×7¼", 426 pages with 454 illustrations, many in colour; price DM 49.80.

This is the fifth revised edition of a textbook which has run through editions during a short course of time after the second World War, the last edition having been published in 1955. A very large number of illustrations, many of which are in colour, have been used throughout the text to impress upon the reader, by direct visual appeal, what has been described in text. The text is easy and flowing; and the captions of the illustrations are quite descriptive and easy to grasp. Special mention may be made about the chapters on gynaecological urology with the problems of urinary incontinence and the one on gynaecological orthopaedics—subjects which are of increasing practical importance and yet often receiving scant attention in usual textbooks. Printing, get up, binding and the presentation generally—are good, and the price appears to be reasonable. Recommended to readers knowing the German language.

A Modern Practice of Obstetrics—By D. M. Stern, M.A., M.B., B.CH. (CANTAB.), F.R.C.S., F.R.C.O.G. and C. W. F. Burnett, M.D. (LOND.), F.R.C.S., F.R.C.O.G.; line drawings by Susan M. Robinson, M.U.A.A. Second edition, 1958, published by Bailliere, Tindall and Cox Ltd., 7 & 8 Henrietta Street, London, W.C. 2; board bound, 11"×7¼", 258 pages; price 45s.

This second edition appears six years after the previous one. For this edition portions of the text including the whole chapter on antepartum haemorrhage, have been re-written and several new subjects have been discussed; for example hypotensive drugs, pain during pregnancy, hypofibrinogenaemia and amniotic embolism. This book lays stress on the practical aspects of the problems in obstetrics, avoiding much of pure theoretical considerations, except in so far as they have a direct bearing on practical obstetrics or where they may stimulate a young practitioner to further thoughts. The normal and common abnormal conditions have been emphasised, clearly considered and presented, while the rarer complications have been briefly mentioned. The 140 figures, mostly in line, are sufficient for the instructions described in the text. The book, though somewhat small in dimension, is yet practical in its approach, and will prove quite useful to the student and the practitioner.

Drugs of Choice : 1958-59—Edited by Walter Modell, M.D. Published 1958 by C. V. Mosby Company, St. Louis, U.S.A.; board bound 10"×7", 931 pages; price $12.75.

A very large number of drugs have been put in the hands of the physician during the last few years; newer and newer drugs being tried, manufactured and offered each year—through the very effective co-operation between the synthetic chemist and the pharmaceutical manufacturer. Every day the physician is informed—through the mails, and by the field-worker—about the multitude of drugs. In the face of these facts, it is very often difficult for the physician to get and form an unbiased opinion about these modern drugs; and hence it is naturally still more difficult to discriminate, judge and choose the best drug suited to a particular clinical condition or a specific case. For the seriously ill, time may be precious, and also the patient is likely to assume, with a right to expect, that his physician will provide the optimum drug for his condition the first time he writes a prescription. Under these circumstances the physician very often feels the necessity for a book of reference where unbiased, authoritative, and definitive information bearing on this problem of selecting the best drug for the particular case's therapeutic target. Through the good co-operation, combination and compilation of several experts this book will prove a comprehensive source of clear, concise, authoritative yet unbiased and practical answers to the continual questions about the drug to choose in a rapidly changing scene or at a critical moment in a patient's treatment. Biologicals have not been considered in this book. The book has been carefully produced, with good co-operation and sifting of information available; and will prove to be a very helpful guide to the practitioner who naturally wants to do his best for his patients.

Pediatric Gynecology; with sections on urology and proctology—By Goodrich C. Schauffler, fourth edition, 1958, published by The Year Book Publishers Inc., 200 East Illinois Street, Chicago 11, U.S.A.; price $9.00.

This fourth edition of the book makes its appearance five years after the previous one. This interval, with the present-day rapid advancement in all branches of modern scientific medicine, has necessitated a thorough revision of the text. Moreover several new chapters have been added in this latest edition, and a few others have been completely re-written and re-cast, in the light of modern developments and requirements. Mention may, in this respect, be made about a new section on the intersexes and female pseudohermaphroiditism, conditions resulting from anoestrogenic status of childhood, masturbation, genital bleeding before menarche, and also a new section on menstrual hygiene for girls. The subject matter has been dealt with good elucidation, clarity and due stress on the psychosomatic aspects attendant upon gynaecological disorders in childhood. A careful perusal of this book is really worth the return in illumination, information and guidance about the management of the

delicate problems confronting the practitioner with a paediatric gynaecological patient.

The Principles and Practice of Medicine: a textbook for students and doctors—By Sir Stanley Davidson and the Staff of the Department of Medicine, University of Edinburgh, and associated clinical units. Fourth edition, 1958, published by E. & S. Livingstone Ltd., Edinburgh and London; board bound in jacket, 8¼″×6″, 1067 pages; price 35s. net.

This fourth edition of the book follows the third edition of two years ago which again passed through another reprint in 1957. This shows the great popularity enjoyed by this book, which it rightly merits. Besides two appendixes, an index and a table of weights, measures etc., there are 17 chapters in the book for the text. Each section of the book starts with a discussion of the anatomy and physiology of the system concerned, and this naturally encourages a rational approach to an understanding of symptomatology and treatment; and the section ends with a review of the measures available for the prevention of disease. Each section in this book has been carefully reviewed not only by the editor but by one or more of the other contributors. The editor believes, and rightly so, that one of the main reasons of the success of this textbook is this close co-operation existing between the various members of the staff and himself in its production. It can certainly be said that the style, composition and presentation of the text have met with the approval of a large number of students and doctors. This new revised edition has been prepared with equal devotion, earnestness and thoroughness, and is thus sure to receive continued support and a bigger reception.

Cleft Palate and Speech—By Muriel E. Morley, M.SC., F.C.S.T., Fourth Edition. Published 1958 by E. & S. Livingstone Ltd., Edinburgh and London; board bound with paper jacket, 7″×5″, xx plus 271 pages; price 27s. 6d. net, postage 2s. 5d.

The fourth edition of the book on Cleft Palate and Speech by Muriel E. Morley has become an excellent treasure for the unfortunate children who are born with this defect. None but the surgeons interested in cleft palate operations appreciate the importance of speech therapy after operations on such children.

The present edition has dealt with the anatomy, physiology, and corrective operations in a masterly style. The actual procedures and processes to be adopted although given in short are sufficient for guidance. Morley should have appreciated that alphabets are different in different national languages. Alphabets in Indian languages are grouped according to the similar mechanical ways of pronouncing them. There are lip alphabets, teeth alphabets, etc. It would be worthy of a book of such high order to add another chapter to analyse the speech in other languages and of other nations. No doubt that this book should find a place in every library and with plastic surgeons and paediatric surgeons.

OBITUARIES

Dr. A. Roy

Dr. Adhirath Roy, an active member of the Tejpur branch, I.M.A. breathed his last on 7-10-58.

Dr. Roy got his L.M.F. diploma in 1936 from the Dacca Mitford School. He also passed the L.T.M. examination in 1957 and topped the list of the successful candidates. He earned a good reputation as a physician and was very amiable and social.

His death is a distinct loss to the Indian Medical Association.

Dr. T. Seshachalam

Born in 1890, Dr. T. Seshachalam breathed his last on May 6, 1958, after a very successful career as a surgeon. After qualifying from the Medical College, Madras, he went to England and obtained L.R.C.P. and M.R.C.S. He joined the Victoria Hospital, Bangalore, in 1926 as an Assistant Surgeon and rose to be its Medical Officer in 1939. In 1937, he toured America, United Kingdom and Europe and on his return popularised local and splanchnic anaesthesia which were at that time started at Vienna. Dr. Seshachalam was a teacher of outstanding ability. As Medical Officer, Victoria Hospital,

DR. T. SESHACHALAM

Principal of the University Medical School and subsequently as Director of City Hospitals he proved himself, a capable administrator. He was the first Indian to be appointed Residency Surgeon of the Bangalore Cantonment area in 1948.

Dr. Seshachalam was a founder member of the Mysore Medical Association and used to take active interest in the various affairs and activities of the Indian Medical Association.

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SUPPLEMENT
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XXXV ALL-INDIA MEDICAL CONFERENCE, CUTTACK, DECEMBER, 1958

The Organising Secretary of the All-India Medical Conference has released the following :

Orissa has the honour to invite the 35th Annual Session of the Indian Medical Association to the historic city of Cuttack, this December.

Dr. H. K. Mahtab, the Chief Minister of the State has kindly agreed to be the Patron-in-Chief. Dr. George Patnaik has been elected as the Chairman of the Reception Committee.

The members of the Reception Committee are well ahead in their arrangements to receive the delegates and visitors from all over India and make their stay at Cuttack as comfortable and pleasant as possible. All delegates and visitors will be accommodated in the premises of the S. C. B. Medical College, the venue of the conference.

Members desirous to attend the conference are requested to register their names and reserve their accommodation before the 10th December '58.

Necessary registration and reservation forms may please be obtained directly from the Organising Secretary, 35th All-India Medical Conference, S. C. B. Medical College, Cuttack-1, Orissa or through the Branch Secretaries of the Indian Medical Association. The registration fee is Rs. 5/- for each delegate.

Railway concessions are available to the members of I.M.A. on their registration as participants of the conference.

Direct trains are available at Asansol, Howrah, Kharagpur, Madras, Hyderabad and Vizagapatam, to reach Cuttack.

The nearest Air-Port is Bhubaneswar (eighteen miles from Cuttack) in the main air-route between Calcutta and Hyderabad.

The weather at Cuttack during December will be pleasantly cool. Personal kit must include bedding with a thin blanket, a pair of Gaberdine or light woollen suit, etc.

No hotel accommodation is available at Cuttack. All accommodation have been arranged in buildings within the conference campus.

Family accommodation is extremely limited. Members desiring to come with their families are advised to write to the Organising Secretary, well in advance and to be sure about the accommodation of their family members. It will be very difficult to provide for accommodation of children at Cuttack. All catering will be arranged in the delegates' camp and it will be both non-vegetarian and vegetarian types on coupon system.

Sight-seeing facilities are being arranged to visit places of historical, architectural, religious and industrial importance of Orissa within Cuttack as well as at Bhubaneswar, Puri, Konarak, Chaudwar, Sambalpur. A trip to Chilka Lake will be a special attraction.

Volunteers will be available everywhere to help and guide the delegates and visitors.

The success of the conference greatly depends on the co-operation of all the members on their registration and reservation of accommodation well ahead of the scheduled time.

No guarantee for accommodation can be given unless registration is done before the 10th December, 1958.

CAMP CHARGES

Camp charges including boarding and lodging, transport for local sight-seeing inside Cuttack and from railway or air station to camp and back are as follows :

One person	...	Rs. 12·00 per day
One person	...	Rs. 6·00 per half day (before or after 2 P.M.)
One child under 12 years	...	Rs. 5·00 per day

Reduction at the rate of Re. 1/- per day is allowed for any three or more consecutive days if reservation is made in advance. Dhobi, barber, postal and newspaper services will be available in the delegates' camp. Bed tea will be served in the camp. Breakfast, lunch, tea and dinner wil be served in the Dining Pandal.

If however the trip has to be cancelled the advance remittance for registratoin and accommodation will be refunded in full less M.O. commission provided information is received before the 1st December, 1958.

PROGRAMME

22nd & 23rd Dec., 1958	Working Committee Meeting
24th & 25th Dec., 1958	Annual Central Council Meeting
26th December, 1958 ..	Inaugural Session of Conference
27th December, 1958 ..	Open session of Conference
28th December, 1958 ..	Ordinary Central Council Meeting

SCIENTIFIC SESSION

26th December, 1958 ..	Symposium on 'Diseases of Liver'
27th December, 1958 ..	Symposium on : Filarial Lymphoedema of Limbs Role of Sterilisation in Family Planning
28th December, 1958 ..	General Papers

RAILWAY TIMINGS AT CUTTACK

Trains		Arrival at Cuttack
Howrah-Hyderabad	Janata Express ...	1-45 A.M.
Hyderabad-Howrah	Janata Express ...	0-20 A.M.
Howrah-Madras	Mail	10-51 P.M.
Madras-Howrah	Mail	4-41 A.M.
Kharagpur-Vizagapatam	Passenger ...	3-20 A.M.
Vizagapatam-Kharagpur	Passenger ...	10-26 P.M.
Howrah-Puri	Express	6-02 A.M.
Howrah-Puri	Passenger	2-31 P.M.
Asansol-Puri	Passenger	9-15 P.M.

FLIGHT TIMINGS AT BHUBANESWAR

IAC Flt. No. 261 Calcutta-Hyderabad		IAC Flt. No. 263 Hyderabad-Calcutta
Dep. 7-30 A.M.	Calcutta	Arr. 8-20 P.M.
Arr. 9-10 A.M.	Bhubaneswar	Dep. 6-40 P.M.
Dep. 9-25 A.M.		Arr. 6-25 P.M.
Arr. 11-05 A.M.	Vizagapatam	Dep. 4-45 P.M.
Dep. 11-25 A.M.		Arr. 4-25 P.M.
Arr. 1-25 P.M.	Hyderabad	Dep. 2-25 P.M.

SIGHT-SEEING PLACES OF ORISSA

CUTTACK, the venue of the 35th All-India Medical Conference, is wellknown all over India and abroad for her silver filigree and horn works. Of historical importance in the city are the thousand-year-old stone embankments of river Mahanadi and Kathjori on either side of the city, the ancient Barabati Fort of Kalinga rulers, the famous stables of Rani Ahalya Bai, the beautiful Juma Masjid etc. Other centres of attraction in the city are the Ravenshaw College, Medical College, Engineering school, Saheed Memorial Hall, Barabati Stadium, Central Rice Research Institute, Kalinga Industries, Industrial Estate etc.

BHUBANESWAR (18 miles from Cuttack), the new capital of Orissa, has got the wonderful mixture of different phases of ancient Orissan architecture and magnificent structures of the modern times. It has got the largest and most stupendous concentration of shrines, temples and forts of Hindu, Jain and Buddhist India of old in a radius of six miles. The most towering structure is the temple of Lingaraj rising to a height of 147 feet and 9 inches. Attractive structures of the modern times are the New Market, Secretariat, Agricultural College, Water tower etc.

PURI (56 miles from Cuttack), the famous pilgrim centre on the sea with a sandy beach, is said to be the finest in the east coast of India. There is synthesis of diverse cults with the temple of Lord Jagarnath as the centre of attraction standing 214 feet and 8 inches from the road level. Additional attractions are the big tank, Narendra, the Bada Dand (Central Grand Road), Gundicha Mandir (Garden House of Lord Jagarnath), Swarga Dwar (Door of Paradise) and shops for collecting curios from Orissa.

KONARAK (40 miles from Bhubaneswar) is another attractive spot with the 'Black Pagoda' a paradox with conventional structure of a vast canvas of human drama depicted with unrestrained abundance of plastic decoration in every conceivable motif. Considered as one of the great wonders of India, the constructional glory and grandeur of the architecture of Konarak should not be missed by a visitor to Orissa.

CHAUDWAR (5 miles from Cuttack), the ancient capital of Utkal (Orissa) in 1200 A.D., has again grown into importance by developing into an industrial centre of Orissa with textile and cotton mills, paper mill, Kalinga Tube Industries, thermal station, etc.

HIRAKUD (9 miles from Sambalpur) is now famous for the dam across the mighty Mahanadi offering a multipurpose project for flood control, irrigation and power generation. A stretch of water covering 288 sq. miles and a shore line of 156 miles. The 25 feet penstrokes of the Hirakud Power House are the largest in India and probably the largest yet in Asia and the Far East. It is a marvel of modern science and architecture.

CHILKA (90 miles from Cuttack), a vast expanse of water extending 450 sq. miles, abounds in charming natural scenery is an ideal spot for fishing, yachting and duck-shooting specially in December when it is thickly stocked with Siberian ducks and beautiful birds.

BRANCH NOTES

ALIGARH BRANCH—A meeting of the branch was held on 3-10-58. Dr. (Miss) H. Saidus Zafar presided. Fourteen members were present. Office-bearers for 1958-59 were elected with Dr. B. R. Shukla as president, Dr. I. H. Ansari as vice-president, Dr. Hafiz-ur-Rahman as secretary and Dr. Y. Dayal as joint secretary. Routine business was also transacted.

AMRELI BRANCH—The annual report of the branch for 1957-58 shows that meetings were held regularly every month and the members discussed clinical subjects amongst themselves.

ANANTAPUR DISTRICT BRANCH—The annual general meeting of the branch was held on 12-10-58 with Dr. M. P. Sarma in the chair. Office-bearers for 1958-59 were elected with Dr. M. P. Sarma as president, Dr. A. Narasimhulu as vice-president, Dr. V. K. Rajaram Rao as hony. secretary and Dr. K. Rangiah Chetty as joint secretary. The members requested the Collector, Anantapur, by a resolution to allot a portion of land by the side of the new hospital for the construction of a building for the Association. The following cases were demonstrated: (1) Haematuria by Dr. M. N. Sarma, (2) Tuberculous Stricture of the Sigmoid Colon by Dr. Mrs. Revathi. (3) Perforating Injury of the Abdomen with perforation of intestine treated on conservative lines by Dr. T. Lakshmana Rao. (4) Fibrosarcoma of Buttock by Dr. T. Lakshmana Rao. (5) A Case of Gall Stones by Dr. M. N. Sarma. Dr. Sannappa read a paper on Modern Treatment of Leprosy and Dr. T. Lakshmana Rao, a paper on the Diagnosis and Management of a case of Tetanus. The annual report of 1957-58 shows that 6 meetings were held during the year and 35 members were on the roll.

ASSAM STATE BRANCH—The activities of the Assam Medical Relief Committee run under the auspices of I.M.A. for the year ending 30th September 1957 gives an indication of the increasing responsibilities of the Committee. The Committee opened 4 rural health centres during the year. The activities of the Relief Committee spread over 5 village health centres, 1 medical relief centre, 12 milk feeding centres and flood relief work and epidemic work. In addition to the free medical aid given to the sick, steps were taken to make the people health conscious by health lectures, posters and pictures. Hookworm Campaign was started also, during the year. Special attention of the Committee was given to the welfare of the women and children in addition to medical relief work. The centres are running with the combined efforts of the Red Cross and the Medical Relief Committee and gradual expansion of the activities of the committee are in progress.

BAZALI BRANCH—A meeting of the branch was held on 28-9-58. After the normal business was over, an interesting case of pain in the right lower limb was discussed. The members also discussed medical ethics in the meeting.

BANGALORE BRANCH—The annual general meeting of the branch was held on 28-9-58. Office-bearers for 1958-59 were elected with Dr. D. R. Nanjappa as president, Dr. S. V. Govinda Setty as vice-president, Dr. M. C. Devanniat and Dr. K. Thimappiah as secretaries.

BULANDSHAHR BRANCH—Office-bearers for 1958-59 were elected with Dr. R. B. Singh Rathore, Civil Surgeon, as president, Dr. A. S. Sharma as vice-president and Dr. H. N. Beri as secretary. The annual report for the year 1957-58 shows that the branch held 10 meetings during the year. Dr. J. Tara Chand Agarwal of Delhi gave a lecture on Fracture of Femur Bone.

CHINGLEPUT BRANCH—The members of the branch assembled to condole the sad death of Dr. N. Shanmugar of Nagalapuram, due to heart failure.

CUTTACK BRANCH—The annual meeting of the branch was held on 11-10-58, with Dr. K. N. Misra in the chair. Twenty-nine members were present. Dr. K. C. Saha spoke on Some New Therapeutics of Common Skin Diseases and demonstrated a few cases. The annual report for 1957-58 was adopted. Office-bearers for 1958-59 were elected with Dr. K. N. Misra as president, Dr. R. N. Misra and Dr. S. C. Misra as vice-presidents and Dr. J. M. Senapati as hony. secretary. The report of 1957-58 shows that membership increased from 107 to 130. Twelve meetings were held during the year and scientific subjects were discussed in the meetings.

DEHRA DUN BRANCH—The annual meeting of the branch was held on 4-10-58. Dr. S. L. Goyal presided. Thirty-one members were present. The annual report of the branch for 1957-58 was adopted. Office-bearers for 1958-59 were elected with Dr. K. K. Mathur as president, Dr. R. M. Sharma, Dr. Raja Singh as vice-presidents, Dr. Jagmohan Singh as hony. secretary and Dr. Ram Murti as joint secretary. The annual report

for 1957-58 shows that 14 meetings were held during the year, out of which 9 were clinical. Interesting subjects were discussed in the clinical meetings. Membership shows slight increase. Seven executive meetings were held.

DEOLALI BRANCH—The annual meeting of the branch was held on 28-9-58. Office-bearers for 1958-59 were elected with Dr. (Mrs.) S. S. Chitnis as president and Dr. S. M. Chitnis as hony. secretary.

DHANBAD BRANCH—The annual general meeting of the branch was held on 12-10-58. Dr. H. C. Mallik presided. The creation of an autonomous board by the Government of India for taking over the medical arrangements of the Mining Settlement was reiterated. Office-bearers for 1957-58 were elected with Dr. M. M. Saha as president, Dr. (Miss) V. N. Khare, Dr. S. N. Ghosh, Dr. R. N. Roy and Dr. P. K. Chatterjee as vice-presidents, and Dr. R. Mukherji as hony. secretary. Dr. H. C. Mallick was congratulated on his election as president of the Bihar State Branch.

FAIZABAD BRANCH—The annual report of the branch for 1957-58 shows that 15 meetings were held during the year. The library got new additions. Nine meetings were also held, when clinical papers were read and discussed. The annual general meeting was held on 6-10-58. Office-bearers were elected with Dr. Y. D. Kapur as president, Dr. H. C. Rai, Dr. R. N. Mitra and Dr. P. S. Jain as vice-presidents, Dr. R. K. D. Mitra as hony. secretary and Dr. S. A. Khan and Dr. M. C. Saxena as secretaries, Social and Cultural, and Scientific Section respectively.

FEROZEPORE BRANCH—A meeting of the Branch was held on 28-10-58. Dr. H. D. Gulati presided. Office-bearers for 1958-59 were elected with Dr. M. L. Suchdev as president, Dr. P. C. Jain as vice-president, Dr. R. R. Aggarwal as secretary and Dr. B. D. Gupta as joint secretary.

HARDOI BRANCH—The annual report of the branch for the year 1957-58 shows that 14 meetings were held during the year. In the scientific meetings, interesting cases were shown and clinical problems discussed. Dr. N. L. Sharma of K. G. Medical College, Lucknow, gave two interesting lectures on 2 occasions. The annual meeting was held on 3-10-58 and office-bearers for 1958-59 were elected with Dr. S. N. L. Asthana as president. Dr. S. B. Singal as vice-president and Dr. Purna Deva as hony. secretary.

HAZARIBAGH BRANCH—The annual general meeting of the branch was held on 11-10-58. Seventeen members were present. Dr. J. N. Sen presided. The annual report and the statement of accounts were presented. Office-bearers for 1958-59 were elected with Dr. J. N. Sen as president, Dr. N. K. Mehra and Dr. (Miss) R. M. Scott as vice-presidents, Dr. P. K. Roy as hony. secretary and Dr. B. Chatterjee as hony. joint secretary.

HILSA-ISLAMPUR BRANCH—A meeting of the branch was held on 9-10-58. Office-bearers for 1958-59 were elected with Dr. L. C. Verma as president, Dr. S. N. Modak as vice-president, Dr. R. N. Roy as secretary and Dr. M. S. Guha as joint secretary.

JAHANABAD BRANCH—The annual general meeting of the branch was held on 7-9-58. Dr. R. Saran presided. Ten members were present. The annual report and statement of accounts were presented. The report shows that 6 monthly meetings were held and Health Week was celebrated. Office-bearers for 1958-59 were elected with Dr. R. Saran as president, Dr. N. G. Sinha as vice-president and Dr. A. Ahsan as hony. secretary.

JORHAT BRANCH—The annual general meeting of the branch was held on 17-10-58. Office-bearers were elected with Dr. B. B. Sengupta as president and Dr. N. Bordoloi as secretary.

K. G. F. LOCAL BRANCH—The annual general body meeting was held on 3-10-58. Office-bearers for 1958-59 were elected with Dr. K. S. George as president, Dr. (Miss) Lalita Lingiah as vice-president, Dr. R. G. Lavi as secretary and Dr. V. H. Das as joint secretary. The government was requested for an early implementation of the Drug Central Act at K.F.G.

KHAMGAON BRANCH—The annual general meeting was held on 12-10-58. Dr. J. V. Barve and Dr. V. R. Sane were elected as president and secretary respectively for 1958-59. The report for 1957-58 shows that 16 members were on the roll, 9 clinical meetings were held.

MIRAJ BRANCH—A monthly meeting was held on 9-9-58. Dr. A. G. Fletcher presided. A general discussion was held on the Treatment of Typhoid with Chloramphenical. The annual general meeting was held on 22-10-58. The annual report and statement of accounts were approved. Dr. A. G. Flectcher was elected as president and Dr. M. S. Karandikar and Dr. A. N. Gaikwad as hony. secretaries for 1958-59. Dr. B. P. Chidgupkar narrated his experience of his Russian tour.

MORVI BRANCH—A meeting was held on 21-10-58 to bid farewell to Dr. H. M. Shah on his leaving for Bombay.

NELLORE BRANCH—The annual meeting of the branch was held on 20-9-58. Dr. (Miss) M. S. Morse presided. Dr. Venugopal was introduced to the members and he spoke on Stricture Urethra and demonstrated some cases of Cancer Bladder. The annual report and audited accounts for 1957-58 were presented. Office-bearers of the last year were re-elected for 1958-59.

NILGIRI DISTRICT BRANCH—The annual meeting of the branch was held on 25-10-58. Office-bearers for 1957-58 were elected with Dr. T. D. Jeevarathnam as president, Dr. (Miss) L. Herlufsen and Dr. V. Mahadevan as vice-presidents, Dr. D. S. Chandrasekhar as hony. secretary and Dr. K. P. S. Nambiar as hony. joint secretary. Dr. P. S. B. Venkatachalam spoke on Nutrition in Pregnancy, Lactation, Infancy and Childhood. Dr. S. Sriramachari spoke on Nutrition in Liver Diseases.

PILIBHIT BRANCH—The annual meeting of the branch was held on 4-10-58. Office-bearers for 1958-59 were elected with Dr. M. P. Chaturvedi as president, Dr. R. R. Mahajan as vice-president and Dr. C. L. Saxena as hony. secretary. The annual report of the branch for 1957-58 shows that 6 monthly meetings and 1 extraordinary meeting was held during the year. Clinical subjects were also discussed in these meetings.

PORBANDAR BRANCH—The Annual General Meeting of this branch was held on 25-8-57. Dr. H. H. Chavda was elected president, Drs. Miss K. M. Patel and T. D. Parekh, vice-presidents. Drs. K. W. Waghela and B. D. Jhala were elected as hony. secretaries.

An ordinary meeting was held on 12-10-57 to give a hearty send off to Dr. H. H. Chavda, president of the Branch on the occasion of his transfer to *Parbhani* (Marathawad). All the members of the Branch were present. Drs. Waghela, Manawati, and Jahla spoke on the occasion.

A special meeting was held to meet Dr. R. A. Bhagwat, Senior vice-president of I.M.A. Dr. G. B. Mankad, president, G. & S. Provincial branch, I.M.A. and Dr. P. R. Trivedi, Hony. Territorial Secretary. 15 members were present. Dr. P. R. Trivedi spoke on E.S.I., Dr. Bhagwat requested the members to enroll more members, and Dr. G. B. Mankad, spoke on various diseases.

A meeting was held on 2-2-58. 8 members were present. Dr. D. L. Desai was elected on the Hospital Advisory Committee. All the members of the branch took active interest in Anti-Cholera Campaign started by the Government and Municipality of Porbandar. The membership of the branch has gone down on account of the frequent transfer of the doctors in service, and subsequent appointments of Ayurvedic doctors in their places.

SEONI BRANCH—A clinical meeting of the branch was held on 11-10-58. Dr. Mackay was in the chair. There was a discussion on Cholesterol Content of Blood and its importance in Coronary Diseases.

SHILLONG BRANCH—A clinical meeting was held on 23-8-58. Thirty three members were present. Dr. Ian Lyall from Melbourne presented a case each of Chondromata and Diaphyseal Aclasia of Keith. Dr. R. Arthur

Hughes presented a rare case of Torsion of Omentum (with removed specimen) in an adult, which had been found to be secondary to right Inguinal Hernia without strangulation. He also showed 2 cases of Tuberculosis of the Hip, treated surgically by successful arthrodesis. Dr. Hughes also demonstrated 2 cases of Tuberculosis of the Spine—anterior spinal fusion after removal of debris and caseous material and bone grafting. All these cases showed new methods of surgical approach.

SHIMOGA BRANCH—The annual meeting of the branch was held on 5-10-58. It was inaugurated by Sri G. Subrahmanyam, Superintending Engineer, B. R. Project. The Scientific session was presided over by Dr. M. N. Mahadevan of Bangalore. A Number of cases were demonstrated in the meeting. Office-bearers for 1958-59 were elected with Dr. D. Krishna Murthy as president, Dr. R. Lakshmana Rao as vice-president and Dr. B. H. Kalyani as secretary.

SHOLAPUR BRANCH—The annual general body meeting of the branch was held on 26-9-58. Office-bearers for 1958-59 were elected with Dr. M. J. Chidgupkar as president, Dr. (Mrs.) I. S. Diwadkar as vice-president, Dr. M. N. Vaidya as hony. secretary. The annual report of the branch for 1957-58 shows that 10 general body meetings, 5 clinical meetings, 5 executive body meetings, 7 building committee meetings, 4 V. M. U. C. meetings, 2 condolence meetings and 3 farewell meetings were held during the year. Dr. B. N. Sinha, Orthopaedic Surgeon of Lucknow, Dr. S. D. Ambegaonkar of Baroda, Dr. S. O. Vangsarkar, Dean of the G. S. Medical College of Bombay, Dr. Shah of Bombay and Dr. Talwalkar of Bombay addressed the members during the year on interesting clinical subjects. A series of 6 Refresher Course lectures were arranged for the members during the year. At the request of the Commandant N.C.C., a series of 9 lectures was arranged for the cadets. The annual report of the School Sub-Committee for 1957-58 shows that 2944 students were examined during the year. Under the Village Medical Relief Scheme, 148 trips were arranged.

SILIGURI BRANCH—The annual general meeting of the branch was held on 5-10-58 with Dr. A. K. Ghosh in the chair. Twentyfive members were present. Office-bearers for 1958-59 were elected with Dr. G. C. Ghosh as president, Dr. K. N. Chatterjee and Dr. A. K. Ghosh as vice-presidents and Dr. S. K. Ghosh as hony. secretary. The report shows that one clinical meeting was held each month.

SITAPUR BRANCH—A clinical meeting of the branch was held on 27-9-58. Dr. Pratap Bahadur, Civil Surgeon presided. Dr. J. M. Pahwa showed a case of Internal Hydrocephalus with Optic-atrophy. Dr. D. P. Gupta gave a short talk on Cardiac Emergencies in General Practice.

SURAT BRANCH—The annual report of the branch shows that 10 regular meetings, 2 special meetings and 3 meetings for showing films were held during the year. Eleven new members were enlisted. Interesting clinical discussions were held in the regular meetings. Office-bearers for 1958-59 were elected with Dr. C. J. Ghia as president, Dr. (Mrs.) S. N. Vora as vice-president and Dr. N. T. Mascati as hony. secretary.

TENALI BRANCH—The 14th anniversary of the branch took place on 28-9-58. Dr. Y. Madhava Rao presided. Dr. D. V. Venkappa, president, IMA and Dr. K. Rangacharyulu, president of the Andhra Pradesh Branch addressed the meeting. Office-bearers for 1958-59 were elected with Dr. C. Satyanarayana Rao as president, Dr. K. Papa Rao as vice-president, Dr. K. Veeraraghavayya as secretary and Dr. P. Rajyalaxmi as joint secretary. In the scientific session, Dr. P. Laxmana Rao of the Guntur Medical College spoke on Symptomatology and Pathogenesis of Peptic Ulcers. Dr. P. Venkateswararao of Vijayawada Medical Association spoke on Treatment of Peptic Ulcers. The District Collector, Guntur was requested to allot 300 sq. yds. in the premises of the Revenue office for the construction of the association building.

TRIVANDRUM BRANCH—The annual meeting of the branch was held on 17-10-58, Seventy members were present. Dr. B. M. Ambady presided. The report for 1957-58 and the statement of accounts were adopted. Dr. Strom, WHO Professor of Paediatrics in the Medical College, Trivandrum spoke on Rheumatic Fever in Children, Dr. C. O. Karunakaran was felicitated on his election as president of I.M.A. Office-bearers for 1958-59 were elected with Dr. R. Sankara Raman as president, Dr. Neelakantan Nambiar as vice-president, Dr. K. P. Ramachandran as hony. secretary.

VISAKHAPATNAM BRANCH—A general body meeting of the branch was held on 13-9-58 with Dr. G. V. Satyanarayana Murty in the chair. The following cases were demonstrated :

1. Xeroderma Pigmentosum. Two cases from the wards of Dr. B. V. Satyanarayana.
2. A case of Post-Arsenical Exfoliative Dermatitis from the above ward.
3. A case of Pemphigus Vulgaris from the above ward.
4. A case of Aneurism of Transverse Portion of Arch of Aorta from the wards of Dr. V. S. Raghunadhan.
5. Three cases of Protein Malnutrition from the Institute of Paediatric Unit by Dr. P. Tirumalarao.

II ALL-INDIA SALON OF MEDICAL PHOTOGRAPHY

The above mentioned salon is being held at Cuttack in confunction with the XXXV All-India Medical Conference. The sections are: (1) General Medical Photography. (2) Photomicrography. (3) Radiography. (4) Medical Cinematography. (5) Slides. It is open to all persons and institutions or firms who are interested in medical photography. There is no entry fee and any number of pictures can be entered. The Exhibits are to be sent on or before the 20th December 1958 to : Salon Chairman, 2nd All India Salon of Medical Photography, XXXV All-India Medical Conference, S. C. B. Medical College Compound, Cuttack 1, Orissa.

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XXVIII PUNJAB PROVINCIAL MEDICAL CONFERENCE, 1958, AMRITSAR

The 28th Punjab Provincial Medical Conference will be held at the Glancy Medical College, Amritsar, on the 29th and 30th November, 1958. The open session of the conference will be followed by scientific session each day. A scientific and industrial exhibition will be held during the conference. Further information from the Hony. General Secretary, Reception Committee of the Conference, Ranjit Singh Palace, Amritsar.

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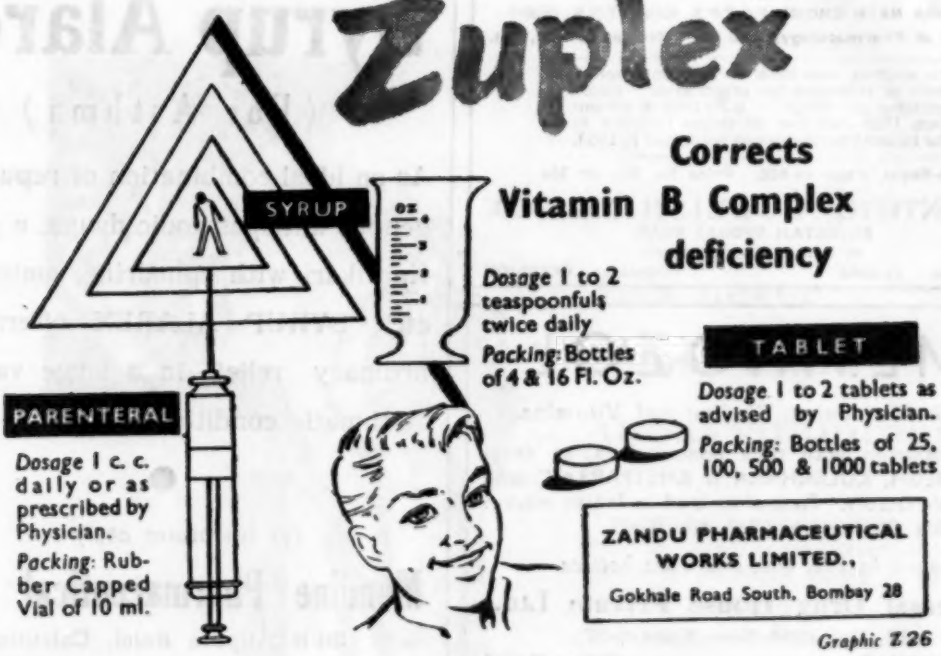

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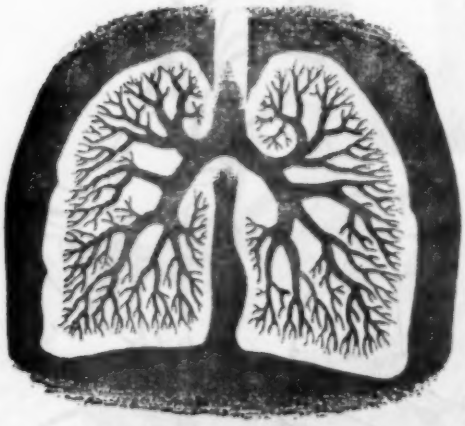

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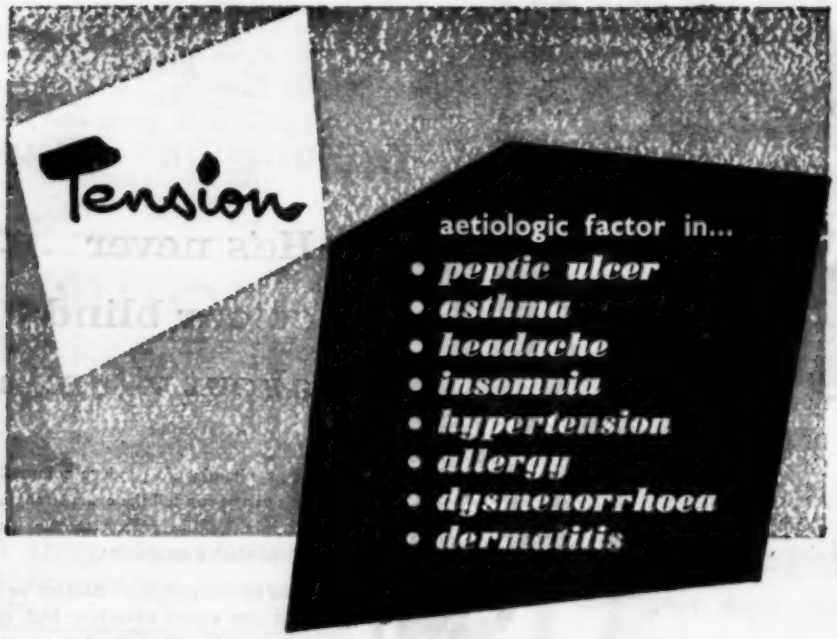

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